166-720

Office Supreme Court, U. S.
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MAR 22 1897
JAMES H. McKENNEY,
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No. 754

October Term, 1896.

UNITED STATES SUPREME COURT.

Ex Parte ALLEXEY W. VON SCHMIDT,

Petitioner.

IN EQUITY.

Petition for Writ of Certiorari and Rule.

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Of Counsel.

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Supreme Court of the United States.

Ex Parte ALLEXEY W. VON SCHMIDT, *Petitioner.*	In Equity.

The above named petitioner, Allexey W. Von Schmidt, now comes and moves the Honorables the Judges of the Supreme Court of the United States for a rule to show cause on the Judges of the United States Circuit Court of Appeals of the Ninth Judicial Circuit, why a writ of *certiorari* should not be issued herein, and a judgment and order of this Court made and entered herein, reversing and setting aside the judgment of said Court of Appeals that was made and entered on the fourth day of January, 1897, in the case of *Allexey W. Von Schmidt, appellant,* vs. *Alphonso B. Bowers, appellee,* affirming the interlocutory decree of the Circuit Court of the United States in and for the Northern District of California, which was entered in the case of *Alphonso B. Bowers, complainant,* vs. *Allexey W. Von Schmidt, defendant,* and why the judgment and order of this Court should not direct the said Circuit Court of Appeals to direct the said Circuit Court to dismiss the bill of complaint in the said case of *Bowers* vs. *Von Schmidt,* at the cost of complainant in the said case, and why petitioner should not have such other and further relief as may be deemed right and just in the premises.

Dated [redacted], 1897.

ALLEXEY W. VON SCHMIDT.

By M. A. WHEATON,
Of Counsel for Petitioner.

IN THE SUPREME COURT

OF THE

UNITED STATES.

OCTOBER TERM, 1896.

Petition for a Writ of Certiorari, under Section Six of the Act entitled "An Act to establish Circuit Courts of Appeals and to Define and Regulate in Certain Cases the Jurisdiction of the Courts of the United States, and for other Purposes," approved March 3rd, 1891, to the United States Circuit Court of Appeals of the Ninth Circuit and to the Judges thereof, in the Case of Allexey W. Von Schmidt, Appellant, vs. Alphonso B. Bowers, Appellee.

To the Judges of the Supreme Court of the United States:

Your petitioner, Allexey W. Von Schmidt, respectfully shows that on the twelfth day of November, 1888, Alphonso B. Bowers as complainant commenced a suit in equity against your petitioner as defendant, alleging an infringement of two United States letters patent, one of which was patent No. 318,859, bearing date on the twenty-sixth day of May, 1885, and granted to the complainant, Alphonso B. Bowers, for a dredging machine; and the other of which patents was patent No. 355,251, and bore date on the twenty-eighth day of December, 1886, and was granted to the said complainant for a hydraulic dredging apparatus. That the defendant duly appeared and answered to the said bill of complaint. That afterwards, on the twenty-sixth day of June, 1891, the said complainant filed an amended bill of complaint in said action, and that said amended bill was the bill upon which the action was tried, and the same is in the printed record in the action, a copy of which record is filed with this petition, at pages 17 to 26.

That the respondent, Allexey W. Von Schmidt, duly filed an answer to said bill on the twentieth day of August, 1891, and the same is in the said record from page twenty-six to page forty-three.

That exceptions were taken to the said answer, some of which were allowed, and afterwards, on the thirteenth day of June, 1892, the said respondent, Allexey W. Von Schmidt, duly filed an engrossed amended answer to the said amended bill, and the same is the answer upon which the case was tried. Said engrossed amended answer is in the said printed record from page ninety-six to page one hundred and six. A replication to said answer was duly filed.

That a large amount of testimony was taken in said case, and it was afterwards argued and submitted to the Circuit Court for its decision, and on the 23d day of July, 1894, Hon. Joseph McKenna, Judge of said Court, rendered his decision in the case, and entered an interlocutory decree holding and adjudging that the complainant's said patents were valid in law, and that the respondent had infringed claims numbered 10, 16, 25, 53, 54 and 59 of said first patent No. 318,859, and claims numbered 13, 17 and 18 of said second patent No. 355,251, and said interlocutory decree contained an injunction restraining and enjoining the respondent from further infringing upon said claims.

The said opinion and decision of said Circuit Court is in said printed record from page 116 to page 135; and the said interlocutory decree is in said printed record from page 109 to page 113.

That thereafter the said respondent carried the case by appeal to the Circuit Court of Appeals of the Ninth Judicial Circuit of the United States, and that Court after hearing arguments in the case did, on the fourth day of January, 1897, file its opinion and decision in the case, and affirmed the said interlocutory decree of said Circuit Court. The petition for an order allowing the said appeal from said Circuit Court to the said Court of Appeals, the assignment of errors filed therewith, the order allowing the appeal and the citation are in the said printed record from page 2461 to page 2477. A copy of the said opinion and decision of the said U. S. Circuit Court of Appeals is hereto annexed and marked Exhibit A and is made a part of this petition.

And your petitioner further shows that, as stated in said amended bill, the complainant filed his original application for a patent for his inventions in dredgers in the Patent Office on the ninth day of December, 1876. That the said application contained fifty-four claims. That under the rulings and rejections of the officers of the Patent Office the said Bowers amended said claims and reduced their number to twenty, and on April 18th, 1877, his application was allowed

with said twenty claims only. That the applicant failed to pay the final government fee within the six months from the date of such allowance and notification thereof to him and by reason thereof his application lapsed. That thereafter, on the 16th day of April, 1879, and within two years from and after the said 18th day of April, 1877, the complainant renewed or attempted to renew his application in the Patent Office for his inventions, and to use on such renewal the original specifications, oath, drawings and model which had been made and filed in his original application of December 9th, 1876, and which were then on file in the Patent Office.

That the renewal, or attempted renewal, of said application was made by filing in the Patent Office a letter, of which the following is a copy, viz.:

" To the Commissioner of Patents:

" Your petitioner represents that on December 11th, 1876, " he filed an application for letters patent for an improve- " ment in dredging machines, which application was allowed " April 18th, 1877, but that he failed to make payment of the " final fee within the time allowed by law.

" He now makes renewed application for letters patent for " said invention and prays that the original specification, " oath, drawings, and model may be used as a part of this " application.

" ALPHONSO B. BOWERS."

That the said renewal, or attempted renewal, of said application was not made in any way or manner other than by filing said letter in the Patent Office. That no new specification was filed on such renewal application, nor was any oath made therewith that the applicant was the first or original inventor of the inventions described in the specifications or claimed by the applicant. No oath at all was filed in connection with said renewal.

And your petitioner further states and shows that the only provisions of law that permitted applications to be renewed after a patent had been ordered to issue on an original application, and after the application lapsed for non-payment of the final government fee within six months after the patent had been allowed, are found in section 4897 of the revised statutes, of which the following is a copy, viz.:

" *Sec. 4897. Any person who has an interest in an invention* " *or discovery, whether as inventor, discoverer, or assignee, for* " *which a patent was ordered to issue upon the payment of the* " *final fee, but who fails to make payment thereof within six*

" months from the time at which it was passed and allowed, and " notice thereof was sent to the applicant or his agent, shall have a " right to make an application for a patent for such invention " or discovery the same as in the case of an original application. " But such second application must be made within two years after " the allowance of the original application. But no person shall " be held responsible in damages for the manufacture or use of " any article or thing for which a patent was ordered to issue " under such renewed application prior to the issue of the patent. " And upon the hearing of renewed applications preferred under " this section, abandonment shall be considered as a question of " fact."

That as your petitioner is advised and believes to be true, under the provisions of said section the renewed application could only be made in the same manner that an original application is made, and could only be allowed for the same invention for which the patent had been ordered to issue upon the original application. But your petitioner avers that after the said application was made on April 16th, 1879, the complainant changed his specifications and drawings and added new subject matter to the inventions described in his original application after dividing such specifications into several divisional applications and finally obtained the patents on which said action against your petitioner has been prosecuted. That the said patent number 318,859 contains one hundred and three claims, and an infringement was adjudged only of claims numbered 10, 16, 25, 53, 54 and 59 thereof. That said patent number 355,251 contains twenty-two claims, and an infringement was adjudged of Claims 13, 17 and 18 thereof only. That both of said patents were granted as parts of the inventions that were described in the divisional applications which were made after said renewal of said original application that was filed in the Patent Office, December 9th, 1876, and renewed April 16th, 1879, as hereinbefore set forth, and for inventions that were not covered in said original specifications.

And your petitioner further states and shows that each and every one of said claims that are adjudged to have been infringed by your petitioner covered new subject matter of alleged invention, and covered inventions for which no patent had ever been ordered to issue until the year 1885, and inventions which were not described and claimed in said original specifications or shown in the said original drawings at all.

That so far as your petitioner and his counsel are informed the said section 4897 of said Revised Statutes has never been

construed by the Supreme Court of the United States, and it has never yet been specifically decided whether or not under the provisions of said section the specifications after a renewal could be amended and changed and new inventions put into them and patents issued under such renewal for inventions for which no patent had been ordered to issue, and for inventions which were not described in the original specifications at all; and that, as your petitioner and his counsel believe, the construction of said section and the determination of these questions is now herein presented to this Supreme Court for the first time.

And your petitioner avers that the specifications of the original application is on pages 299 to 318 of the Record. That the original drawings which were filed with said original application consisted of twenty-three figures, not a single one of which was exactly like any single one of the figures that were contained in either one of the patents on which this suit is based. Said original drawings are in the Record as Exhibits A M., and are not in the printed Record, but are among the exhibits which are certified as parts of the entire Record. That in said original application was contained as a part of the inventions for which a patent was asked a turn-table, which was the center of oscillation on which the dredger was to swing while at work. That after said renewal the complainant desiring to cover a method of walking the dredger forward by the use of two spuds, each of which was used alternately as a center of oscillation, and which was invented and patented to Horace B. Angell, as will he more particularly shown hereinafter, changed his specifications and inserted therein the following for the express purpose of covering what he knew he had not invented, and which he knew the said Angell had invented, viz.:

"A less perfect forward feed is secured by placing the " dredger so that the excavator is at the side, and the turn-table " in line with the longitudinal axis of the proposed excavation. " The turn-table is then rotated until the vertical anchors are " in a line parallel with the transverse axis of the dredger, " where it is made stationary. This leaves one anchor diago- " nally in advance of the other, the dredger lying diagonally " across one half of the line of the proposed excavation. The " forward anchor is now dropped into the mud to form a pivot, " upon which the dredger swings as it cuts to the opposite " side. The dredger then lies diagonally across the other half " of the line of the proposed excavation, the swing having " brought the rear anchor to the front. This anchor in turn " is dropped to form a new pivot, and the other anchor is then

"raised. The dredger swings first upon one and then upon "the other anchor, these anchors being alternately raised and "lowered for this purpose. As this mode of feeding by swing- "ing alternately upon two different pivots gives a wedge-shaped "cut, requiring two full swings to make one full cut, it is "equivalent to a loss of one-half of the time, and is used only "to prevent stoppage of work when the apparatus for rotating "the turn-table is stopped for repairs or other cause, in which "case it becomes valuable." See page 5 of the specifications of patent 318,859 from folio 50.

Your petitioner further avers that the one principal device of Mr. Bowers' supposed inventions which he put into his original specifications was a rotary excavator in which there were curved radiating bottomless buckets, and which was carried by and rotated around an inner hollow chamber which constituted the lower end of the suction-pipe. That by the plan of said rotary excavator it was expected to operate by having the radiating buckets dig into and receive the mud that was being dredged and to force such mud into such bottomless buckets and fill them. That an opening was cut through the top of the inner cylinder and such opening was of the same dimensions as was the open bottom of each one of the said bottomless buckets. That the inventor explained in his said original specifications that the said radiating bottomless buckets would cut up the mud and carry it around the inner cylinder until the bottom of each bucket would be over the said opening in the top of the inner cylinder, when the suction would draw the mud into the said inner cylinder and from thence up the suction-pipe. That afterwards, when the said Bowers in the year 1878 built an experimental dredger and applied his said rotary excavator as described in said original specifications, and which description was substantially the same as is now contained in the specifications of said patent number 318,859, he found that his apparatus would not operate in any mud that was thick enough to require any cutting devices at all and that therefore his rotary cutter was a failure. That after said Bowers had seen the excavator that was made by this petitioner in 1876, and also after he had seen an excavator that was invented by the said Horace B. Angell, which is shown in a patent to said Angell that will be hereinafter referred to, and also after he had found that his own rotary excavator with said inner cylinder was a failure he desired to get rid of his inner cylinder and to appropriate the principle of an open hollow rotary excavator. That to accomplish this object the said Bowers changed his specifications and claims long after he had made his said renewal application, and

not before, and put into the specifications the following, viz. (see page 4, same specifications, from folio 45):

"The office, in part, of this chamber or shield is to prevent "too large a percentage of water from entering with the mud; "but when the spoils are of a character to require a large per- "centage of water to carry them up the suction-pipe, or to send "them through the discharge-pipe, as may sometimes be the "case, the chamber may be cut away until only enough remains "to support the excavator and shaft R."

That the insertion of this new description put into the patent a new kind of excavator, and one that partook largely of the nature of the excavators of this defendant and of said Angell, and that they dispensed with the inner cylinder and left the inside of the excavator entirely open so that the dredged material which was in the bottomless buckets could pass at once through the bottomless buckets at any stage of their revolutions and before such material became wedged and jammed in the buckets so firmly that the suction would not draw it out of them.

That an infringement of said Claim ten of said first patent could not have been adjudged except by construing the claim to mean the vertical spud as the self-contained pivot mentioned therein, nor could any infringement have been adjudged of either of Claims 53, 54 or 59 of said patent, except by holding that those claims covered the new excavator as covered by the new description contained in said new matter last above quoted.

Your petitioner further avers that his counsel presented this matter to the Circuit Court which tried the case, and also to the said Circuit Court of Appeals which affirmed the decree of the said Circuit Court. That the said Circuit Court decided that the said new matters could be put into the specifications after the renewal, as is shown by the reference to the following parts of its said opinions, viz.:

On pages 119 and 120 of the Record the said opinion of the Circuit Court says, in reference to the use of the spuds instead of the turn-table:

"The use of spuds as centers of oscillation, it will be ob- "served, the patent says secure a less perfect forward feed "than the turn-table, and it was not described in the original "specifications but was inserted afterwards, and defendant "claims, after a patent to one Angell, and plaintiff had seen a "dredger constructed by defendant. If so, it was not a part "of his original invention, and he must be confined to the "turn-table as a center of oscillation. That the use of spuds "alone was not described in the original specifications is true,

" but the evidence does not sustain the other contention of " defendant that plaintiff copied from defendant, or was an- " ticipated by Angell."

And further on, on pages 125 and 126, the said opinion states, in reference to the new form of excavator that was put into the renewal specifications, that there are two forms of excavator described in the patent, one with an inner chamber having an opening in the top, and the other with the inner chamber cut away until only enough remains to support the excavator and its shaft.

And your petitioner avers that the excavator having an inner cylinder cut away until only enough remained to support the excavator and its shaft was not described in any way, shape or form in the said original specifications or claims, nor was it put into the specifications in any way until after the said renewal application was made.

On said page 125, near its bottom, the said opinion of the Circuit Court states that:

" It is true that he amended his specifications, but that he " had conceived an excavator with inward delivery without an " inner chamber or cylinder, is shown by Exhibit N. This " model was made in 1868. Model I, I, made about the " same time, also shows the inner cylinder cut away.

" It was certainly competent for the Patent Office to permit " him to amend his specification so as to embrace his inven- " tion," &c.

Your petitioner avers that the said statement in the last three lines above quoted from said opinion of the Court had reference solely to the two species of new subject matter that was put into the specifications for the first time, after the said renewal application was made, and the statement was in effect the decision of the Court that such new subject matters might be put into the specifications as well as into the claims of the patent for the first time after the renewal application was made. That one of said new subject matters referred to by the Court in the above quotation was the description and application of the said spuds as centers of oscillation, and the other was the second form of the excavator with its inner cylinder cut away as above described.

Your petitioner further states that the material facts of the case, so far as they apply to the issues of law and fact which he now is praying this Honorable Court to pass upon, are as follows, viz.: That long prior to the inventions that were made in dredgers by the complainant Bowers there was in common public use a well-known suction dredging apparatus that

was commonly known as a "sand pump." That this old sand pump was built with a rotary pump at the upper end of a suction-pipe and with a discharge-pipe forward of the rotary pump. That the said sand pump was in common use for dredging soft material, such as mud and sand and whatever material could be drawn by a strong suction up through the said suction-pipe, and in operation the rotary pump created a suct which drew the dredged material up the suction-pipe and into the said rotary pump, and the same pump by its continuous rotary movement forced the dredged material forward out of itself and through the discharge-pipe that was in front of it. Such sand pumps were ordinarily carried upon dredging boats or scows, the same as are the dredgers shown in the said complainant's patents.

That all kinds of dredging machines that were in use prior to the inventions of either this petitioner or of Mr. Bowers were carried and worked upon boats or scows and such boats or scows were held in their desired positions by spuds or "vertical anchors," as the spuds are called in the patents of Mr. Bowers. It was also usual to swing those dredging boats or scows that carried sand pumps and other classes of dredgers around or upon said spuds as vertical centers of oscillation.

That the dredging apparatus described in the patents to Mr. Bowers, as well as those described in the patents of your petitioner, consisted of dredging apparatus that operated by suction and with the same species of rotary pump that had been used in the old sand pumps and also with suction-pipes through which the dredged material was drawn to the rotary pumps and from which rotary pumps the same material was driven forward through discharge-pipes, substantially, and almost exactly, as had been done in said sand pumps. That in the year 1874 your petitioner made the plan of a suction dredger, and on the twenty-first day of July, 1874, filed in the U. S. Patent Office a caveat in which was described the said plan. A copy of the said caveat is in the Record from pages 2439 to 2443.

That your petitioner duly applied for a United States patent on the invention shown in said plan on the third day of July, 1876, and on the 19th day of December, 1876, the patent was issued to him. The specifications and drawings of said patent are in the Record between pages 2428 and 2429.

That, commencing about the month of July, 1876, your petitioner built a dredging machine according to his said patent for Thomas H. Williams, and on the day of October of the same year the machine was set at work building levees and high mounds of earth in the marsh and tide lands of the

lower San Joaquin Valley. That the machine proved entirely successful and continued constantly at its said work until about the year 1882.

That said machine was built upon and carried by a dredge boat or scow. It had a rotary pump which drew the material up a suction-pipe. The suction-pipe was a telescoping suction-pipe and was hung vertically on a frame that extended a small distance over the bow of the boat and which frame was pivoted on the boat's deck and was placed on friction rollers with apparatus by means of which the said frame was swung horizontally, upon a vertical center, around the bow of the boat carrying the suction-pipe with it. At the lower end of the suction-pipe there was a large hood or enlargement of the suction-pipe that was placed mostly at one side of the pipe. Within this hood there was a rotary excavator that was shaped much like the propeller wheels of steamboats, but rotated in a horizontal position and cut up the spoils and mud from the bottom of the water way from whence they were drawn upwards through the suction-pipe by the rotary pump. That the said suction-pipe was constructed with telescoping sections and when the excavator had been carried around to its limit in one direction and the material dredged out as low down as the bottom of the excavator the excavator was lowered down a short distance, cutting its way downwards, and from thence it was made to swing back around the bow of the boat and cut and dredge up another layer of material. This operation was repeated until the required depth was dredged out of the space over which the excavator swung, when the boat would be moved forward a distance equal to the diameter of the excavator and another like cut would be dredged out. That the said machine which your petitioner built up in 1876 was capable of dredging to a depth of twenty-one feet below the surface of the water on which the dredger floated, and it actually did dredge to that depth in practice. The said dredger built some four or five miles of levees that were forty feet wide at the bottom and eight feet wide at the top and from twenty to thirty feet high. It also built four or five acres of mounds that were fifteen feet high.

When the said dredger was first put at work the spoils or dredged material was carried on to the shore through a large pipe that was suspended on masts on the dredger and was about one hundred feet in length. Afterwards, in the year 1877, this discharge-pipe was lowered down and was lengthened and was carried upon pontoon boats over the water to the land, and extended on the land to whatever points it was desired to carry the dredged material.

In operation the dredger boat was usually held by ropes or lines and by vertical spuds that were driven down into the soil under the water and the ends of the cut being dredged were reached by swinging the excavator and suction-pipe around the bow of the boat as stated; but that sometimes it was desired to make a wider cut and then the said swinging frame was made rigid with the boat, and a spud at the back end of the boat was used as a vertical anchor and center of oscillation, and the entire boat was swung and carried its forward end with the excavator around in the segment of a larger circle, and the entire dredging apparatus continued at work while it was so swung. That said excavator was made for General Thomas H. Williams, and it was used by him and his partner David Bixler for levying and improving their own overflowed land, of which they owned a very large tract. The said machine was made according to the description contained in the said first Von Schmidt patent No. 185,600, dated December 19th, 1876. That in the said machine a part of the discharge-pipe was rigidly fixed on to the deck of the dredger boat, and those parts of the discharge-pipe which extended beyond the boat was in all cases attached to that part of the rigid discharge-pipe that was on the deck of the boat by flexible connections, so as to allow the boat to swing and move without being interfered with by the said discharge-pipe.

Your petitioner further avers and shows that in the year 1882 he built a second dredger upon the same plan as that on which his said first machine was built and used, except that he changed the cutting devices that were placed under the said hood by substituting for said propeller-shaped wheel a ring, and attaching thereto plows and sharp knives for the purpose of cutting up and dredging material that was harder than the said first excavator would excavate. That he has used the said second machine ever since the year 1882 and is still using it. That the said two dredging machines are the only machines that he ever made or used at any time since the date at which the said complainant asserts that he had made any of his patented inventions.

Your petitioner further avers and shows that after he built his said second dredger and made said changes in his said excavator he applied for and obtained U. S. Letters Patent numbered 277,177, and bearing date May 8th, 1883, and also U. S. Letters Patent numbered 306,368, bearing date October 7th, 1884, the specifications and drawings of both of which patents are shown in the record immediately after the specifications and drawings of his said first patent, and between pages 2428 and 2429, and the said changes are shown and described in said patents.

Your petitioner further avers that the complainant has testified in said action that the said first dredger made by this petitioner was not any infringement of either of the patents sued upon. Also, that a dredger made as described in petitioner's said first patent would not infringe either of said patents, and the said Courts have so decided in this case. That the complainant Bowers has also testified, and admits, and the Court has decided in this case that there is none of the mechanism or combinations of mechanism contained in either one of the said dredgers built by this petitioner that was invented by Mr. Bowers, and that the infringement of claims 53, 54 and 59 of said patent No. 318,859, is claimed by said complainant, and is adjudged by the Court to consist of the fact, or rather the alleged fact, that the cutters, as made in petitioner's said second machine, had an inward delivery, while his first, said propeller excavator did not have an inward delivery. That the adjudication of the infringement of said three claims is based solely upon the alleged natural effect or operation of inward delivery, which is alleged to be produced by your petitioner's said later cutters, while admitting that there is no mechanism nor any inventions whatever in either of the said Von Schmidt machines that was invented by Mr. Bowers.

One of the questions presented by this petition, therefore, is this: Can an infringement exist of a machine patent when there is no mechanism or combinations of mechanism, and no mechanical equivalents of any mechanism contained in the alleged infringing machine that was invented, or that was claimed to have been invented by the patentee, and when the patent of the patentee neither describes or claims any of the mechanism or combinations of mechanism, or any mechanical equivalents thereof, which can be found in the alleged infringing machine?

And your petitioner further avers that his own invention of his own said dredger was prior in point of time to the invention of the complainant Bowers of his alleged invention. That his own dredgers made under this petitioner's said patents went into extensive use in the eastern part of the United States, and especially in the City of Washington in the District of Columbia. That it was the dredgers invented by your petitioner and described in and covered by his said patents that have been used from the spring of 1885 till the fall of 1890 in dredging along the Potomac river and filling in the Potomac flats.

Your petitioner further avers that the complainant Bowers had never constructed any dredger at the time that he made application for his patent on the ninth day of December, 1876,

and that his application was based upon a mere conception of what would be an improvement in dredging machines. That in practice most, and in fact almost all of the mechanical devices and combination of devices that are shown in said patents sued on, which showed any thing of a novel nature, have been abandoned in practice by Mr. Bowers, and by those who have been licensed by him to build and use dredgers under his patents. That the first of his said patents No. 318,859, shows the following as material parts of Mr. Bowers' inventions, yet none of the same have ever been used but have been thrown away and abandoned as entirely worthless in practice, viz.: The relay pumps and mud receivers, with all of the mechanical devices for operating the same, shown in Figures 9, 10, 13 and 14 of said patent. Also the counter-balancing apparatus shown in Figure 3 of the patent. Also the turn-table F, shown in Figures 1, 2 and 10 of the patent. Also the variable winding device I, the V-shaped friction couplings, the force and suction pump N, with all of the pipes and apparatus to be used therewith. The branch pipe and valve V, the tank W, and the floats and anchors for holding the discharge-pipe between the bottom and surface of the water shown in Figure 9. None of these things have ever been used in practice either by Mr. Bowers or any one else.

That the first dredger built by Mr. Bowers or under his alleged inventions, was built by Mr. Bowers in the year 1878, nearly two years after this petitioner had built his first machine and had it at work. That the said first machine built by Mr. Bowers was only an experimental machine and proved an utter failure, and after he, Bowers, had tried for several months to make it do practicable work it was broken up and abandoned. That Mr. Bowers did not build any other dredging machine, but about the year 1885, another machine was built under his license, and since then other machines have been built under licenses of Mr. Bowers, but only partially in accordance with the descriptions contained in his said patents. That from the year 1878 to the year 1885, no dredger was built by Mr. Bowers or by any associates of his, or in accordance with the descriptions contained in any of his patents.

Your petitioner further shows that U. S. Letters Patent, No. 268,977, bearing date December 12th, 1882, were granted to Horace B. Angell for a dredging machine, and that the same described and covered the method of walking a dredging machine forward by the use of two spuds, one of which was used as a center of horizontal oscillation while the dredger was

swinging and cutting in one direction, and the other of which was used as such center of oscillation while the dredger was swinging and excavating while returning in the other direction. That the said patent described a chain and bucket dredger and not a suction dredger, and was applied for on June 19th, 1882. The last said patent is in the Record between pages 2460 and 2461. That another patent, No. 293,932, bearing date February 19th, 1884, and applied for November 28th, 1883, was granted to said Horace B. Angell for a suction dredger, and said patent described and covered a hollow rotary excavator at the lower end of the suction-pipe. That said excavator was made up of a hollow drum with bottomless scoops that projected outside of the drum for cutting up material and carrying it directly through the open bottoms of the scoops into the inside of the drum without the intervention of any inner cylinder. The specifications and drawings of said last mentioned patent is in the Record between pages 2460 and 2461. That suction dredgers made as described in said last patent of said Angell went into successful use and were known by the name of Atlas dredgers. That as early as the year 1882 the said first Von Schmidt dredger that was made in 1876 was changed into an Atlas dredger, because it could be better used for cutting a canal in swamp land where the surface of the land was higher than the water on which the dredger floated, and after that date that dredger became known as an Atlas dredger. That the said Bowers was a frequent visitor at the place where said Angell was making his plans of said Atlas cutters and well knew of their construction and use before he changed his said specifications and put into them the said new matter which described a rotary excavator wheel with the inner cylinder cut away, as already stated.

And your petitioner further avers that the said Bowers was never the inventor of the said method of walking a dredger forward by the use of two spuds, nor was he ever the inventor of rotary hollow excavators in which the inner cylinders were dispensed with, but that he learned the construction and successful use of such a rotary excavator and also such use of two spuds from the said Angell, and after he so learned such uses he for the first time put them into his specifications.

That in putting the said new matters into many of his claims the said Bowers has undertaken to cover them by incorporating them into claims as mechanical elements of mechanical combinations, and then asserting that such combinations were new combinations, and the said Courts have sustained his claims in this respect. But petitioner avers that the said claims do not

cover patentable combinations, but only aggregations of mechanisms which do not have any joint action between all of the devices covered in each claim and constitute aggregations only. He also avers that each one of the claims which contains the floating discharge-pipe as one of its mechanical elements is a claim for an aggregation only, and the same is true of each one of the claims of the said second patent sued on, which contains a telescopic suction-pipe as one of its elements; and that the construction of such claims is among the questions of law which petitioner prays this Supreme Court to pass upon.

And your petitioner further avers that in the month of June, 1876, he showed to said Bowers a model of his, petitioner's, dredging machine. That the said model then contained the telescoping suction-pipe just as it was afterwards made and used by petitioner in his said dredgers. That petitioner then explained to said Bowers the plan of his said entire dredging machine, as he immediately afterwards built it. That prior to the time of so seeing said model and learning said plan the said Bowers had not himself made any plan whatever of any dredging apparatus that contained any telescoping suction-pipe. That after so learning of petitioner's plan of so using such telescoping suction-pipe, and not before, the said Bowers appropriated and incorporated the telescoping suction-pipe into his own application for a patent.

Your petitioner further avers that the said Courts have adjudged and decided that said Bowers was the first and original inventor of what his patents call for, but he avers that said judgments are based upon the following alleged facts and upon nothing else:

The said Bowers has produced and put in evidence in the case two drawings which are in evidence in the case as Exhibits D, D, and E, E, and said Bowers testified that he made the said drawings in the month of July in the year 1864. He has also produced and put in evidence in the case several models which he has testified that he made early in the year 1868. Said models are Exhibits M² and N, and I, I. All of said exhibits are in the Record and will be presented to this Honorable Court with this petition.

Petitioner further avers that the excavating wheels shown on said drawings are not such excavator wheels as are shown and described in the complainant's patents and do not operate the same or in the same mechanical combinations. That the said wheels shown in said Exhibits D, D, and E, E, are very large in diameter and only a part of their diameter is below the surface of the water. That they are shown with cutting buckets

upon their peripheries which are intended to cut and lift the dredged material by their own exclusive operation and without any suction at all. That the material is to be cut up and carried by the buckets that are upon the peripheries of said wheels to the top of the wheels and there dropped out of the buckets into a hopper, from whence the material is to be taken away partly by washing and partly by suction. That the excavator wheels shown upon said drawings D, D, and E, E, are not shown or described in the complainant's said patents at all, nor were they ever shown in the complainant's specifications at any time.

Petitioner further avers that neither of the said models M², or N, or I, I, or any description of them is shown in the complainant's said patents, except that the rotarycutters shown in the patent are much the same as the cutters shown in models Exhibit N and I, I, if the cutters in the models had contained the inner cylinder which is in the cutters of the patents.

But your petitioner avers that he is informed and believes and states to be true that the making of said drawings and models did not constitute any invention, and that any actual invention shown in the complainant's said patents was not made by Mr. Bowers until after your petitioner had made and perfected his dredger and had it at work in October of 1876. That your petitioner's said first dredging machine, after it was finished, was tested in San Francisco in October, 1876, and Mr. Bowers there saw it tried and successfully operated, and it was not until nearly or quite two years after that event that Mr. Bowers constructed his first experimental dredger.

Your petitioner further avers that after said Bowers applied for his patent his application was at first rejected by the Patent Office on a reference to the said first patent of your petitioner, and that after that time Mr. Bowers framed his claims so as to avoid having an interference declared between himself and petitioner in the Patent Office.

That the state of the art in dredging machines is largely shown in the following patents which are contained in the Record. A part of such evidence applies to what was in existence at and prior to the ninth day of December, 1876, when Mr. Bowers applied for his patent, and a portion applies to the state of the art at and prior to the time when he inserted the said new descriptions and new subject matter and new claims in his specifications after said renewal was made. The dates of the several patents referred to will show to which part of the case they are applicable. The said patents are as follows, viz.:

U. S. Patent No. 75,003, granted to A. Duvall March 3d, 1868, for excavating under water.

U. S. Patent No. 75,004, granted to said Duvall March 3d, 1868, for an improved mode of excavating under water.

U. S. Patent No. 86,290, granted to the said Duvall January 26th, 1869, for a submarine excavator.

The specifications and drawings of said Duvall patents are in the Record between pages 2428 and 2429, immediately after the specifications and drawings of the said Von Schmidt patents.

English Patent to Henry Oliver Robinson, bearing date August 1st, 1868, for improvements in dredging machines. Record, pages 2444 to 2453, the drawings being next after page 2452.

U. S. Patent No. 39,194, granted to Charles, Joseph and William Atkinson July 7th, 1863, for an improved dredging and excavating machine. The specifications and drawings of said last patent is in the Record between pages 2452 and 2453.

English Patent to Thomas Burt, bearing date March 12th, 1867; Record, pages 2454 to 2461.

U. S. Patent to Dean S. Howard, No. 12,201, dated January 9th, 1855. The specifications and drawings of this patent is in the Record, following page 2460.

The said U. S. Patents to Horace B. Angell, the specifications and drawings of which are in the Record between pages 2460 and 2461.

Also the said U. S. Patents to A. W. Von Schmidt, the specifications and drawings of which are in the Record, following page 2428.

Your petitioner further avers that there is further testimony, oral and documentary in the Record, which shows the said state of the art and many other pertinent facts which he will leave for his counsel to point out in their brief and argument herein. That he hereby refers to and makes the entire record in said case of *Bowers* vs. *Von Schmidt* a part of this petition.

Your petitioner further avers that if the present decision and decree of the said Circuit Court of the Northern District of California and of said Circuit Court of Appeals is permitted to stand, that the said Bowers will subject to tribute nearly all of the dredging interests of the United States. That the said first patent of your petitioner has now expired, and his said second patent has nearly expired, and that the public ought to have the right to use the inventions covered by said patents when they have expired, but that if the said present decree is allowed to stand the public will gain nothing by the expiration of said patents.

That the United States Government employed three dredgers built under your petitioner's said patents, from the spring of

1885 until the latter part of the year 1890, for dredging in and along the Potomac river and filling in the Potomac flats in the City of Washington, in the District of Columbia. That one object that Bowers and his counsel have in view is to present a claim for the use of said dredgers against the U. S. Government and to compel said government, through its Court of Claims, to pay to said Bowers enormous amounts of money, amounting to hundreds of thousands, and probably to millions of dollars. That the people of the United States will suffer loss and damage to the amount of many millions of dollars if the said judgment is allowed to stand, by reason of the monopoly which it will create, and damages which will have to be unjustly paid to the said Bowers.

Wherefore your petitioner prays that this Honorable Supreme Court will issue its writ of *certiorari* directed to the Circuit Court of Appeals of the Ninth Circuit and the Judges thereof, directing them to show cause why the said judgment and decree of said Court of Appeals should not be set aside and reversed upon the following grounds, viz.:

Because the Commissioner of Patents exceeded his jurisdiction in accepting the application of said Bowers to renew his prior application for a patent on the sixteenth day of April, 1879, without the filing of any specifications, or the making of any new oath to the effect that the applicant was the first and original inventor of the inventions for which he was applying for letters patent.

Second. Because the said Commissioner exceeded his jurisdiction when he allowed new inventions and new subject matters of invention to be incorporated into the said application of the said Bowers for the first time after the filing of the application for said renewal of the said sixteenth day of April, 1879.

Third. Because the said Circuit Court and the said Circuit Court of Appeals erred in deciding that the said new subject matters of invention could lawfully and properly be added to the specifications for the first time after said renewal applica- was filed.

Fourth. Because the said Courts erred in holding and deciding that the drawings and models that were made by said Bowers in the years 1864 and 1868 constituted full inventions that superseded and anticipated the inventions of Von Schmidt in the inventing and making of his own dredgers in 1876 and 1882.

Fifth. Because the said Courts erred in holding that the said second machine of said Von Schmidt contained infringe-

ments of the patents sued on under the proven and admitted fact that there was no mechanism or combinations of mechanism contained in the said machine of Von Schmidt which the said Bowers had ever invented, or which were described or claimed in either of the patents sued on.

Sixth. Because the said Courts erred in holding and deciding that the said claims, and each of them, of the patents sued on covered patentable combinations instead of aggregations of mechanical elements only.

Seventh. Because the said Courts erred in holding and deciding that the addition of the floating discharge-pipe to the dredging apparatus constituted a patentable combination instead of a mere aggragation of mechanical devices.

Eighth. Because the said Courts erred in holding and deciding that the vertical spud was a center of oscillation that was self-contained by the dredger.

And your petitioner hereby prays for such other or further relief in the matter as to this Honorable Court it may seem proper to grant.

And your petitioner will ever pray, etc., etc., etc.

UNITED STATES OF AMERICA, }
Northern District of California, } ss.

Allexey W. Von Schmidt, being first duly sworn, says that he has read the foregoing petition for a writ of *certiorari* and knows the contents thereof, and that the facts therein stated are true. ALLEXEY W. VON SCHMIDT.

Subscribed and sworn to before me,
this 13th day of March, 1897.

W. Bailey
Deputy Clerk
COMMISSIONER U. S. CIRCUIT COURT,
NORTHERN DISTRICT OF CALIFORNIA.

M. A. WHEATON AND
FRANK J. KIERCE,
Counsel for Petitioner.

EXHIBIT A.

IN THE

UNITED STATES CIRCUIT COURT OF APPEALS FOR THE NINTH CIRCUIT.

A. W. VON SCHMIDT,
Appellant,
vs.
A. B. BOWERS,
Appellee.

No. 232.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF CALIFORNIA.

Before GILBERT AND ROSS, Circuit Judges.

Ross, Circuit Judge, delivered the opinion of the Court:

This was a suit for the infringement of certain claims of certain letters patent. By his amended bill of complaint the complainant alleged that prior to December 9th, 1876, he was the original and first inventor of certain new and useful inventions in dredging machines, machinery and appliances which were not known or used in this country, nor patented, nor described in any printed publication in this or any foreign country, prior to the inventions thereof by the complainant, nor had they been in public use or on sale in this country for two years prior to the complainant's application for a patent therefor, nor abandoned, nor proved to have been abandoned; that, being such inventor, the complainant did, on December 9th, 1876, duly and regularly make and file in the Patent Office of the United States an application for the issuance to him of letters patent for his said inventions, and that such proceedings were had in the matter of his application, that on April 18th, 1877, his application was allowed and a patent for his said inventions ordered to be granted and issued to him upon the payment of the final fee to the Government of twenty dollars within six months from the date of said allowance; that the complainant failed to pay the fee within the time stated,

by reason of which his application lapsed; that within two years after the said 18th day of April, 1877, to wit: April 16th, 1879, under and pursuant to the laws of the United States and the rules of the Patent Office in that behalf made and provided, the complainant renewed his application in the Patent Office for a patent for his said inventions, and filed a renewed application therefor, using the original specifications, drawings and models which had been made and filed December 9th, 1876, and which were then on file in the Patent Office; that both in his original application as also in his renewed application of April 16th, 1879, more than one, to wit: several independent inventions were described and claimed, which, upon examination by the proper examiners of the Patent Office, were found not to be dependent upon one another, and did not mutually contribute to a single result, by reason of which a single patent could not be issued to cover them; that thereafter and before the issuance of any patent therefor, and in accordance with the requirements of the Patent Office, and under and in accordance with the laws of the United States, the complainant did divide his original application and filed divisional applications for his said several inventions; that one of the inventions described and claimed in his original application of December 9th, 1876, and in his renewed application of April 16th, 1879, was entitled "Dredging Machines;" that while his original application was pending the complainant prepared and filed in the Patent Office a separate divisional application describing and claiming his improvements in dredging machines; that nothing was included in his divisional application which had not been shown and described in his original application of December 9th, 1876, and renewed April 16th, 1879; that thereafter such proceedings were duly and regularly had and taken in the matter of his application; that on May 26th, 1885, letters patent of the United States, numbered 318,859, were duly and regularly granted and delivered to the complainant for his said invention, granting and securing to him, his heirs and assigns, for the term of seventeen years from that date, the exclusive right and privilege of making, using and vending the invention therein described throughout the United States and its territories; that one of the complainant's inventions, shown and described in his original application of December 9th, 1876, and renewed April 16th, 1879, was a certain new and useful invention entitled "Hydraulic Dredging Apparatus"; that while his original application was pending, to wit, August 3rd, 1886, the complainant filed in the patent office a divisional application for the issuance of letters patent for said hydraul-

ic dredging apparatus; that nothing was included in his last-mentioned divisional application which had not been shown or described in his original application of December 9th, 1876, and renewal of April 16th, 1879; that such proceedings were duly and regularly had and taken in the manner of his divisional application for a patent on said hydraulic dredging apparatus; that on the 26th day of December, 1886, letters patent, numbered 355,251, were regularly granted and delivered to the complainant for his said invention, granting and securing to him, his heirs and assigns, for the term of seventeen years from that date, the exclusive right and privilege of making, using and vending the invention therein described throughout the United States and its territories; of both of which patents and of all rights and privileges conferred thereby the complainant alleged he has since remained the owner and holder, and both of which patents the amended bill alleged the defendant has infringed.

The answer of the defendant to the amended bill of complaint put in issue its material averments, and also pleaded in defense of the suit, among other things, the abandonment by the complainant for more than two years of his original application for a patent, and alleged that the Patent Office unlawfully and in excess of its powers allowed the complainant to renew his application more than two years after such abandonment. The answer further alleged a want of due diligence in the prosecution of the complainant's application, and averred that on June 14th, 1882, and October 16th, 1884, the complainant struck out all of the specifications in his application on file in the Patent Office at each of those dates, and inserted in lieu thereof, in each instance, other and different specifications, describing other and different inventions, of which he well knew he was not the inventor, and that he also withdrew from his original application all the drawings filed therewith and substituted other and different drawings therefor; that the descriptions, drawings and claims in the patents issued to the complainant were changed from the descriptions, drawings and claims contained in his original application for the express purpose of including in and covering by his patents inventions and improvements which were made by and belonged to parties other than himself; that in accordance with the complainant's original drawings and specifications no useful or operative dredging machine can be constructed, and that upon a fair and adequate trial a machine so constructed has been proven to be useless, and that it is only by reason of changes and modifications

and omissions in the drawings and specifications under the complainant's original application, and an appropriation of the inventions and improvements of others, that there can be constructed, if at all, any operative dredging machine in accordance with the divisional applications of the complainant. The answer further averred that the defendant filed an application in the Patent Office on the 3rd day of July, 1876, upon which his patent numbered 185,600, was granted to him December 9th, 1876; that he made the plans of his dredger for which such patent was issued to him in the year 1874, and made a model thereof in April, 1875, that in 1875 and 1876 he built a dredging machine which embraced the inventions described in his patent numbered 185,600; that in 1882 he built the hull of a new dredging machine, and finished the same by using a large part of the machinery which was put into his first dredger; that his second dredger contained the same inventions that were contained in his first and that these two dredgers are the only dredging machines that the defendant has ever constructed or used or sold in the State of California. The answer further averred that the complainant saw and examined the defendant's model of his first dredging machine and from that model obtained his (the complainant's) first idea of a suction-dredger; that both dredgers made by the defendant were suction-dredgers and were operated by a rotary pump and a telescoping suction-pipe with a rotary excavator having an internal delivery at the bottom of the suction-pipe, and also had connected therewith a floating conveying-pipe through which the spoils were carried and deposited at a distance of a mile from the dredger; that the complainant from time to time examined and studied the defendant's dredger and its mode of operation and made sketches thereof, after which the complainant made his new applications for letters patent and changed his drawings and specifications on file in the Patent Office and purposely framed them so as to cover the dredging machinery and apparatus of the defendant; that in the Patent Office the complainant was referred to the patent of the defendant and changed his claims so as not to include the defendant's inventions, and thereby avoided having an interference declared with the defendant in the Patent Office. The answer to the amended bill also set up various patents and publications as matters anticipating the complainant's alleged invention, and also alleged that the complainant kept the same on sale for more than two years before his application for a patent therefor, and also averred that the patents issued to the complainant contained a needless multiplication of nebulous claims thereby rendering the patents

void, and also that the claims in each of the complainant's patents purport to cover general combinations which may be included in general definitions and in general terms of description and also cover what is not described in his specifications.

The foregoing constitute in substance the defenses set up in the answer to the amended bill. Exceptions to certain portions of the answer were sustained by the Court below, which rulings constitute the first 23 of the 57 assignments of error filed by the appellant; but, as his counsel state in their brief, that they "do not insist upon them unless the complainant claims that the material testimony taken should not be considered for want of a pleading," and as there is no such insistence on the part of the complainant, no further reference need be made to the exceptions.

The record in the case is very voluminous, embracing 2477 printed pages and including a vast number of exhibits. The arguments of counsel are elaborate and able, and while they have been carefully considered and all of the points made attentively noted, it is not practicable to make special mention of them all without extending this opinion beyond reasonable limits. The patent granted to the complainant May 26, 1885, and numbered 318,859, contains 103 claims, and that issued to him December 28, 1886, and numbered 355,251, contains 22 claims. The Court below found infringement by the defendant of Claims 10, 16, 25, 53, 54 and 59 of complainant's patent 318,859, and of Claims 13, 17 and 18 of his patent 355,251. In the specification contained in his first patent the complainant states that his invention "consists of a rotary bottomless-bucket excavator-wheel of moderate size, novel construction, and great capacity, combined with a hydraulic transporting device of equal capacity, by means of which the spoils may be cheaply carried to a distance of several miles over land or water and across navigable channels without interruption of navigation, together with novel feeding devices, through which the percentages of earth excavated by the cutting-wheel and of the water therewith delivered are adjustable to the precise amount of each necessity for most economical working, and by means of which clean work is done, the excavator going twice over no ground and missing no ground, thus saving much time, and effecting a material reduction in the cost of apparatus, repairs and cost of dredging and disposing of the spoils, these being the chief objects of the invention;" and referring to the accompanying plans and figures thereon the complainant thus described his machine and its operation:

"A is a floating vessel that carries the engines, boilers and dredging machinery. It is shown in this instance with an elongated longitudinal well for the reception of the swinging portion of the suction-pipe.

"B is a large pump that draws the spoils from the buckets of the excavator up the suction-pipe and forces them through the discharge-pipe to a place of deposit.

B^1, Figs. 9, 13, is a relay-pump or other auxiliary discharging apparatus, sometimes used in connection with a primary transporting apparatus to carry the spoils to a greater distance than could conveniently be done by the original agent, power or pump, or than would be practicable without subjecting the apparatus to a pressure that might endanger some of the parts, or without the use of heavier or more expensive apparatus than would be desirable for ordinary purposes. It may also be used for discharging the receiver X, and for exhausting water from pipe c^1 (when said pipe is submerged), for the purpose of raising it preparatory to floating it into a new position. As many of these pumps may be used as are necessary to transport the spoil to the required distance.

"C is a suction-pipe connecting the excavator with the pump B. The swinging portion of this pipe is mounted at the inner end of the well upon strong trunnions, one of which forms an elbow of the pipe and passes through a stuffing-box or other suitable connection into the suction-pipe of the pump B. Through the other trunnion passes a shaft that actuates the gears *i*, that drive the shaft R and bucket-wheel E; and upon these trunnions the shaft R, suction-pipe and excavator swing as the cutter is raised or lowered to suit the depth at which the work is progressing.

"C^1 is a discharge-pipe. It is provided with a strong flexible section, D, or other suitable joint or mounting, at or near the turn-table F, and other pivot or center of oscillation of the dredging machine or excavating apparatus, and is constructed and arranged to permit said apparatus or machine to swing horizontally upon said pivot or pivots without materially changing the position of said discharge-pipe beyond said mounting, flexible connection, pivot or pivots. When this pipe is several hundred feet in length, I usually support the inner portion by long, narrow, hollow floats, in which case it consists of two parts—an inner oscillating or swinging section (generally composed of several short sections flexibly joined together and to the dredge-boat), and an outer stationary or non-oscillating section, flexibly joined to said inner section. This permits the boat to feed forward and the oscillating section to swing with

the advancing boat (as the work progresses) on the joint connecting the oscillating and non-oscillating sections. The discharge-pipe is provided with a pressure-gauge, 7, Fig. 1, to give notice of over pressure and danger of choking of pipe from any sudden change in the character of spoil. When pipe C^1 is above deck and extends but a short distance from the mounting D for discharging alongside, it requires supporting, and is usually suspended from a mast, the claim for which is reserved for another application now on file.

"C″ is a pipe passing through the receiver X to the exhausting apparatus of said receiver. When used in connection with the pipe C′ it may be regarded as the prolongation of said pipe.

"C^2 is an auxiliary discharge-pipe, used in connection with any suitable auxiliary transporting apparatus, and extends from said auxiliary to another auxiliary transporting agent or apparatus, or to the place of deposit.

"C^3, Fig. 10, is a discharge-pipe extending from a second relay discharging apparatus to a place of deposit. When a floating discharge-pipe would impede navigation, the greater portion may lie upon the bottom 4, Fig. 9, and when the water is too deep for this it may be suspended from the buoys 5, 5, Fig. 9, and guys and anchors 6 may, if necessary, be used to prevent it from being disturbed by winds, waves or currents. When the pipe is to be submerged, it may be advisable to construct it of thin metallic plates, uniting the several sections with ball-and-socket or other strong flexible connections. In other cases it may be made of wood or metal, according to the preferences of the user.

"E is a rotary bucket-wheel excavator, having radiating bottomless buckets *k*, Figs. 4, 5, 6, 7, firmly secured at each end to the discal ends *b b* of said excavator. These buckets may be stiffened, strengthened, and protected by rings or screens *d*, passing around, secured to, and preferably projecting beyond the edges of said buckets, Figs. 1, 5, 6, 7, 8. These rings may be sharp to cut like the revolving disk-colters of plows, and serve to subdivide the material entering the buckets, and to exclude substances too hard to be cut and too coarse to pass through the pipe and pump. They serve also as fenders to enable the cutter to ride over obstructions without cotching and breaking. The edges of the buckets are sharp, and may be provided with detachable steel knives or cutters S, Fig. 6, for working in hard material. The outer discal end, Figs. 1, 3, 6, 8, may be provided with cutting edges, lips, or scoops *e*, to obviate the danger of breakage from jamming against a hard bank as the dredger heaves in the swell of the sea. In making

the necessary openings in the discal end to admit the silt from said scoops, said end plate becomes changed to the form of a spider or series of arms, which may be strengthened by the lower ring *d*, which in turn may be regarded as forming a series of braces extending between the said arms at or near their outer parts. The several parts of this excavator may be made separate and detachable, or it may be cast in a single piece.

"I do not confine myself to the precise mode described of mounting this wheel or of freeing it of its contents. It may be of any desired size and proportion of parts, and may discharge its contents inward through itself into any suitable conduit or receiver. The rings *d* may be omitted in soft mud free from substances too coarse to pass through the pipes and pump, though always at the risk of the projecting buckets catching upon obstructions and getting broken.

"F, Figs. 1, 2, 10, is a small cylindrical turn-table rotating in a circular well or frame. It is provided with a strong flange or other suitable bearing, and is rotated in any convenient manner. Two or more vertical apertures, *e*, *e*, pass through the turn-table from top to bottom on opposite sides, as shown.

"G, G^2 are vertical anchors passing loosely through the apertures *e*, *e* in the turn-table into the mud below. They are raised by blocks and tackle attached to the mast *f*, or in any other usual manner.

"H is a counterbalance-cylinder connected with the suction-pipe, excavator, and hoisting apparatus, to obviate the danger of breakage from pounding upon the bottom in a heavy swell. It is provided with a piston, piston-rod, and gland, like a steam engine. Steam or compressed air is admitted to the upper side of the piston, the area of which is sufficient very nearly to balance under the given pressure the weight of the suction-pipe and excavator. To the upper end of the piston is attached the hawser L, passing over suitable sheaves in the frame K, thence through the block *g*, Fig. 3, whence it passes over other sheaves in said frame to the windlass J, by which means the excavator can be raised or lowered by said windlass without interrupting the action of the counterbalance. When the dredger rises on a swell, the excavator rises also, and as the dredger sinks in the trough of the sea the excavator falls upon the bottom, not with the full weight of the excavator and suction-pipe, but with the unbalanced weight only, striking so lightly as not to endanger the safety of the wheel. This device is necessary only when dredging a hard bottom in a heavy swell. When not required for this purpose, the cylinder H may be utilized as a steam or hydraulic hoist, or be dispensed with altogether.

"I is a variable winding device, of which there are many suitable forms. I prefer ordinary winding drums driven by a separate engine, though for simplicity of illustration I have shown tapering drums *h*, *h*, loosely mounted on a shaft and driven (through V-shaped friction-couplings and suitable connections) by the main engine. The disengaged drum gives out one warping-line as the engaged drum takes in the other. The office of this device is to vary the speed of the side feed, for the purpose of regulating the percentage of earth and water delivered to the pump without affecting the speed of other parts of the machinery. This speed with the device shown is dependent upon the diameter upon which the warping-lines wind, and is varied by shifting the sliding guide-sheaves *j*, *j* toward or from the larger ends of the drums by means of the hand-wheels and screws, as shown.

"J is a windlass for raising and lowering the excavator.

"K is a frame from which the suction-pipe and excavator are suspended.

"L is a line or chain for raising, lowering and counter-balancing the excavator.

"M, M are warping-lines passing from the hold to the winding-drums *h*, *h*, around which they make a sufficient number of turns to prevent slipping, whence they pass around suitable guide-sheaves, to and through the anchored blocks U, U, to the outer end of the suction-pipe, to which they are secured, so that the working side strain falls mostly upon the outer end of the suction-pipe (or of the ladder supporting said suction-pipe, if such be used), and but lightly upon the joints or trunnions supporting the inner ends of said pipe or ladder. As the outer ends of these lines wind upon the drums in the device shown, the inner ends unwind and descend to the hold. The office of these lines is to swing the excavating apparatus or the dredger from side to side in the process of dredging, and firmly to anchor the excavator end of the dredger when it is not at work, which latter is accomplished by simply engaging both drums *h*, *h* in their friction-couplings.

"N is a force and suction-pump. It is used to exhaust the water from the discharge-pipe for the purpose of raising the submerged portion; to dilute the spoils, so that they will spread over a large area of land, or to enable them to be transported through long pipes without the aid of a relay-pump; to clear the pipes when accidentally choked, should this ever occur, and to prime the pump B, the latter or its suction-pipe being provided with the usual valve or valves for that purpose. Like most steam-pumps, it is provided with two suction orifices on

opposite sides of the water-chamber and a discharge directly over each suction. To the suction and discharge on one side is connected the branch-pipe O, leading into the pipe c^1. Each branch is provided with valves in the usual manner of arranging a branch-pipe to serve for suction and discharge. The discharge branch only is shown, the suction being directly under it. To the suction on the other side of the water-chamber is secured a valve and pipe communicating with any suitable supply of water (usually that in which the dredger floats), and sometimes by a branch-pipe and valve with the hold of the vessel for discharging leakage, and by another branch and valve with pump B for priming said pump by suction. To the discharge above this suction is connected a pipe or hose, that may also be used for priming the pumb B by discharging into it, and for all the various purposes of an ordinary ship-pump. When O is used as a suction-pipe to draw from pipe c^1, the valve on the discharge branch is closed, the suction-branch valve is opened, and the discharge is through the pipe or hose on the opposite side. When O is used as a discharge-pipe to force into pipe c^1, the suction-branch valve is closed, the discharge-branch valve is opened, and the suction is through the opposite suction-pipe. When the suction is through the pipe opposite the suction-branch of pipe O, the discharge may be through the pipe or hose above it or through the discharge branch of O into pipe c^1, as regulated by the valves to suit the purposes of the user.

"O is a pipe with branches and valves connecting both suction and discharge on one side of the pump N with pipe C^1, and is either a suction or discharge-pipe, as regulated by its valves.

"P, P are long, narrow, hollow floats, preferably extending longitudinally along each side of the short sections of the discharge-pipe, for supporting them on the water. They may be made of wood or metal, and be secured together and to the discharge-pipe by pieces of scantling passing crosswise over and under the pipe and floats and fastened with rods passing each side of the pipe and floats, as shown in Fig. 11, though I do not confine myself to this form of construction.

"Q is a pulley or gear for actuating the gears *i* and excavator E. It may be connected with its shaft by a friction-coupling.

"R is the driving-shaft of the bucket-wheel. It is keyed or otherwise secured to the hub of the wheel, whence it passes through suitable bearings in the inner chamber, up the suction-pipe, and through a stuffing-box to the gears *i*, by which it is actuated.

"S is a strong detachable steel knife, sometimes used on the edges of the buckets when working in hard material. It may be serrated, chisel-toothed, or straight-edged, according to the character of the materials to be cut, a straight edge being preferable for ordinary work.

"T is an inner chamber or shield, around which the bucket-wheel revolves, and into which it discharges. This chamber is provided with a strong flange, by which it is secured to a similar flange on the end of the suction-pipe. It is also provided with a large opening, *a*, Figs. 4, 7, through which the spoils enter from the buckets, and through this opening, Fig. 4, is seen a portion of the driving-shaft R, and the bearing of said shaft in the end of said chamber. This chamber or shield forms a bottom for the buckets *k* until they reach the opening *a*, as shown in the cross-section of the wheel and chamber, Fig. 7. As the buckets pass this opening, they discharge mud and water into the chamber, as indicated by the inner arrows, the outer arrow showing the direction of rotation. The office, in part, of this chamber or shield is to prevent too large a percentage of water from entering with the mud; but when the spoils are of a character to require a large percentage of water to carry them up the suction-pipe, or to send them through the discharge-pipe, as may sometimes be the case, the chamber may be cut away until only enough remains to support the excavator and shaft R.

"U, U are blocks anchored at suitable points on each side of the dredger, through which pass the warping-lines M, M, for the purpose of swinging the dredger or the excavating apparatus from side to side. They are usually placed from three hundred to six hundred feet apart and a little in advance of the ends of the first cuts made by the excavator, to allow a wide swing and avoid the necessity for too frequent change of place as the work progresses.

"V is a branch pipe and valve, through which samples of the spoils are drawn from the discharge-pipe, to enable the operator properly to regulate the speed of the side-feed. It is preferably placed about one-third the diameter of the discharge-pipe from the lower side of said pipe in order to secure a fair average sample.

"W is a small tank resting upon scales. It is provided with a discharge-pipe and valve. It is filled with spoils drawn from the discharge-pipe through the branch and valve V, and the speed of the side-feed is increased or diminished according to the weight of the spoils.

"X is a floating mud receiver carrying the relay-pump or

other auxilary discharging apparatus B′ and its actuating apparatus. The main purpose of this receiver is to permit the excavator to run continuously, although the relay-pump be stopped for a little while, the receiver affording a receptacle for the spoils in the meantime. Longitudinally through this receiver passes the pipe C″ to the auxillary discharging apparatus B′, whence the pipe C^2 extends to another auxillary discharging apparatus or to the place of deposit.

"Y is a valve on the pipe C″ within the receiver X. This valve is adjusted to open automatically outward with slight pressure, and serves as a relief-valve in case of stoppage of the pump B′ while the pump B is ruuning. It serves also as a guide to regulate the speed of pump B′, wihch should be increased beyond that necessary for preventing the opening of this valve in order to aid by suction as well as forcing. This valve may be set wide open for the purpose of filling the receiver, and may be securely closed when the pump B is used to force the material into the pump B′ for the purpose of increasing the efficiency of the latter. It is also opened to admit air into the discharge-pipe when the water is to be withdrawn therefrom by pump N.

"Z is a branch and valve through which mud is drawn from the receiver to be discharged through pipe C^2.

"Z^1 is a branch and valve for admitting water to wash out the pipe C^2 after the mud has been discharged from the receiver.

"Z^2 is a valve for closing pipe C″ while the mud-receiver is being discharged, or when said receiver is disconnected from the pipe C^1 and takes the mud directly from the dumping or dredging apparatus.

"Z^3 is a pipe and valve used for admitting water through the bottom of the receiver for the purpose of diluting the mud when it is too stiff to pass freely up the branch Z. It may have branch pipes with numerous small openings for the more thorough dilution of the spoils. This receiver may be used in connection with any dredging apparatus for continuous transportation of the spoils through pipes as the work progresses; or it may be filled, towed to the place of deposit, and there be connected with a discharge-pipe for putting the spoils on shore.

"The operation of dredging is as follows: The vertical anchors and excavator being raised to allow freedom of motion, the dredger is placed in position with the turn-table in line with the longitudinal axis of the proposed cut. The turn-table is then rotated until the vertical anchors are also in line with said axis, and both anchors are then dropped into the mud.

The discharge-pipe is placed in position, the blocks U, U anchored at suitable points for swinging the machine, and the dredger swung around until the excavator reaches the side of the proposed cut, as shown in Fig. 10. The lines M, M are drawn taut and the excavator lowered below the surface of the water. The pump B is then primed, started and the excavator set in motion and lowered its entire diameter into the mud. The proper winding drum is then engaged, and the dredger, swinging on the turn-table as a pivot or center of oscillation, rapidly cuts its way to the opposite side. To secure a steady side feed, the friction-coupling of the unwinding-drum may be adjusted to keep the unwinding line sufficiently taut to prevent the veering of the dredger with wind or tide. Upon reaching the opposite side the winding-drum is disengaged, the excavator again lowered its full diameter, the side feed reversed, and the dredger cuts back again. This process is repeated until the proper depth is obtained. The excavator is then raised above the bank in front, the anchor G raised, as shown in Fig. 2, and the turn-table rotated upon the anchor G^2 until G is squarely in front of G^2, in line with the longitudinal axis of the proposed excavation, as indicated by the broken lined outline G^1, Fig. 2. G is then dropped into the mud, and the work proceeds as before, the dredger having been fed forward the distance between the centers of the vertical anchors, which is fixed to correspond with the cut capable of being made by the excavator. This arrangement for feeding forward keeps the center of oscillation of the dredger coincident with that from which the arc to be cut by the excavator should be described. A less perfect forward feed is secured by placing the dredger so that the excavator is at the side, and the turn-table in line with the longitudinal axis of the proposed excavation. The turn-table is then rotated until the vertical anchors are in a line parallel with the transverse axis of the dredger where it is made stationary. This leads one anchor diagonally in advance of the other, the dredger lying diagonally across one-half of the line of the proposed excavation. The forward anchor is now dropped into the mud to form a pivot, upon which the dredger swings as it cuts through the opposite side. The dredger then lies diagonally across the other half of the line of the proposed excavation, the swing having brought the rear anchor to the front. This anchor in its turn is dropped to form a new pivot, and the other anchor is then raised. The dredger swings first upon one and then upon the other anchor, these anchors being alternately raised and lowered for this purpose. As this mode of feeding by

swinging alternately upon two different pivots gives a wedge-shaped cut, requiring two full swings to make one full cut, it is equivalent to a loss of one-half of the time and is used only to prevent stoppage of work when the apparatus for rotating the turn-table is stopped for repairs or other cause, in which case it becomes valuable."

It will be seen from the foregoing that the fundamental elements of the complainant's patent 318,859, and of the machine covered by it, are: A boat and excavator capable of working with a side feed, a non-rotating suction-pipe and exhausting and discharging apparatus, a discharge-pipe, a self-contained pivot or center of oscillation on which the boat swings from side to side while it is working, devices for swinging and for working the machine from side to side, devices for moving the machine ahead preparatory to a nut cut, a floating discharge-pipe when the spoil is to be transported over water, a submerged discharge-pipe when the spoil is to be carried across a navigable channel without impeding navigation, and an outer stationary section of discharge-pipe when the spoil is to be carried over land.

The claims of this patent found by the court below to have been infringed by the defendant are the following:

"10. A dredge-boat having a self-contained pivot forming a center of horizontal oscillation, with devices for swinging and working said boat upon said pivot, in combination with a suction-pipe, exhausting apparatus and rotary excavator."

"16. A dredge-boat and oscillating section of a conduit discharge flexibly joined to a non-oscillating section to allow said boat to feed forward and said oscillating section to swing upon the flexible joint connecting said oscillating and non-oscillating sections."

"25. A discharge-pipe consisting of a series of sections flexibly joined together and supported by floats, in combination with a dredger having a rotary excavator."

"53. The combination, with a non-rotative suction-pipe, of a rotary excavator having an inward delivery through said excavator."

"54. The combination, with a dredge-boat and non-rotative suction-pipe, of a rotary excavator having an inward delivery through said excavator."

"59. A rotary excavator with inward delivery, in combination with a non-rotating suction-pipe mounted upon strong trunnions or equivalent joints, to permit the excavator and outer end of the suction-pipe to be raised and lowered to suit the depth at which the work is progressing."

The defendant contends that the complainant was not the inventor of the machine thus patented to him, but that he copies its essential features from a machine built and invented by the defendant; and, moreover, that the complainant's machine was anticipated by various other patents and publications set up in the answer. If the evidence shows this to be true, we need go no further with the case. We, therefore, turn to the record to see what foundation, if any, there is for this contention. So far as the defense of anticipation is concerned, it must be established as of a date anterior to the patentee's invention or discovery; not merely prior to the application for, or the date of, his patent. (Revised Statutes, sections 4886, 4920; *St. Paul Plow Works* vs. *Starling*, 140 U. S., 198; *Clark Thread Co.* vs. *Willimantic Linen Co.*, *Id.*, 492; *Webster Loom Co.* vs. *Higgins*, 105 U. S., 592; *Kneeland* vs. *Sheriff*, 2 Fed. Rep., 901; *Woodman* vs. *Stimson*, 3 Fish, 105; Merwin Patentability of Inventions, Sec. 323). And as against the defense of anticipation it is well settled that the patentee may show, if he can, the fact of invention by drawings, sketches, models or any other competent proof. (Walker on Patents, section 697; *Loom Co.* vs. *Higgins*, 105 U. S., 594; *Bates* vs. *Coe*, 98 U. S., 34; *Smith* vs. *Goodyear*, 93 U. S., 486; *Consolidated B. Co.* vs. *Woerle*, 29 Fed. Rep., 451.)

The record shows that for many years the complainant was investigating the subject of dredging and had familiarized himself with most, if not all, of the dredgers in existence. He was familiar, too, with the sand-pump. The latter while it would pump sand, would not cut and remove hard material. Before the complainant did anything in the direction of invention, there were also dredgers in existence and in use that *would* cut and remove hard material. There were the "Scoop," and the "Clam-shell," and the "Chain-bucket," and Hart's dredger, and Fraser's dredger, and the patent to D. S. Howard of January 9, 1855, and Atkinson's patent of July 7, 1863, and the rotary-wheel dredge of Fondé and Lyons, and other rotary dredges of which the complainant had knowledge; for in the original specification contained in his application for a patent he himself stated that "for more than two centuries rotary dredges have shown a capacity for cutting and lifting far in excess of any other dredging device; but in the forms of construction hitherto adopted it has been necessary to make the diameter of the wheel much greater than the depth to be dredged; thus making them too unwieldy for ordinary uses, while the best appliances for removing the spoils have fallen far short of the dredging capacity of the wheel." But prior to

the complainant coming into the field there was no machine, by whatever name known, that would, by the simultaneous and continuous co-operation of its various elements, cut and remove hard material from a water-way and itself transport the same to any desired distance and place. The complainant undertook to accomplish that thing. The accomplishment of the purpose necessarily involved the severing of the material in place, the lifting of it and its transportation through some sort of conduit to the desired place of deposit. The evidence shows that the complainant, having devoted much study and thought to the subject, embodied his ideas in a drawing, marked Exhibit DD, and which was introduced in evidence. Upon its face the drawing is dated July 13, 1864. Counsel for the appellant assert in argument that this date is false; that the drawing was actually made in the year 1884 and antedated twenty years. The ground of this contention on the part of the appellant is that the words "inward delivery," which appear upon Exhibit DD, do not appear in the complainant's proceedings in the Patent Office prior to March, 1884. The words "inward discharge" appear instead in the complainant's original specification. The two expressions mean one and the same thing. The use of the word "discharge" in place of the word "delivery" in the original specification is explained by the complainant by saying that the first draft of the specification was prepared by his attorney, who used the term "inward discharge" instead of "inward delivery," and that when he (the complainant) revised and redrafted the specification before sending it to the Patent Office he followed the phraseology of his attorney, but that subsequently, when he took personal charge of his application, he redrafted the specification and claims and adopted the phraseology originally used by him in the drawings of 1864. There is nothing in the circumstance relied on by the appellant to cast any doubt upon the testimony of the complainant in respect to the true date of Exhibits DD and EE, especially as there is much testimony corroborative of that of the complainant, which is to the effect that he made the drawing on the day they, respectively, bear date. The complainant testified that while holding a position as clerk in the office of the United States Surveyor General for the State of California he was thrown in daily contact with all matters pertaining to swamp land and swamp land reclamation and had many conversations with people desirous of reclaiming such land and in regard to the best mode of doing so. "This lead me," said the witness, "to continue my investigation of dredging and ditching machinery, and I soon came to the conclusion

that the proper mode of leveeing a river was to take the material from the bed of the river. I then conducted a series of experiments with regard to the carrying capacity of water in pipes. I discovered that by cutting holes in the bottom of the pipe the sand would drop through those holes while the water would pass over and be discharged where I wished to deposit the sand, and in this way I could build sand embankments. This led me to devise a hopper with an injection pipe entering the bottom of the hopper directly opposite to the mouth of a discharge-pipe, and the material to be dumped into this hopper and carried by the injection stream through the discharge-pipe. I then considered the mode of applying this method with reference to putting the material from the river on shore. This led me to connect with my pipe floats for supporting it. I then became convinced that centrifugal pumps would carry off a larger quantity of material than could be handled by ordinary dredgers, and I began to investigate for the purpose of discovering some method of supplying the pump with all the material that it could handle. This led to the combination with the aforesaid apparatus of a rotary excavator, and on the thirteenth day of July, 1864, I made a drawing showing this combination, which I now produce and offer in evidence. (Being Exhibit DD.) The date above mentioned appears upon the drawing itself. I fix this date in three ways: First, because I was so elated with the idea that I would never forget it if I would live to be a thousand years old. I thought I had discovered something that was going to make me a fortune. Second, because of the date appearing on the drawing itself. Third, because I was introduced the day before, by John S. Hittell, to the librarian of the Mercantile Library, and while there in that library, on the 12th day of July, I found in Cressley's Encyclopedia of Engineering an account of Bailey's rotary excavator used in the time of King Charles the Second of England, and that set me to thinking and led me to devise the combination, which I thought out during the night and of which I made a drawing the next day. This drawing represents a rotary excavator with inward delivery through itself to a suction-pipe. These buckets are of themselves bottomless and revolve around an inner cylinder which forms a bottom to the buckets until they reach a depression in the top of said inner cylinder where the material is discharged into a receiver communicating with the suction-pipe. Objection being made to this sketch by certain parties to whom I showed it, on the ground that material might wedge in between the buckets and the drum, I devised and made a drawing of the rotary bucket-wheel excavator

with hinged falling bottoms to obviate this difficulty. This drawing last referred to was made the following day, July 14, 1864, and that drawing I now produce and offer in evidence. (Being complainant's exhibit EE.)"

This testimony of the complainant in respect to the time when the drawings exhibits DD and EE were made finds corroboration in the testimony of the witnesses Houghton, McGann, Crane, Bender, Shaw and Gray. We are satisfied from the evidence that they, together with the memoranda appearing upon them, were made at the time they, respectively, bear date. Copies of those drawings and memoranda are inserted in the margin.[1]

They show not only and altogether new combination of elements for the transportation of the spoils, but also something radically new in rotary excavators, namely, a rotary excavator with inward delivery through itself in combination with a suction-pipe. They show a dredge-boat having two self-contained pivots or centers of oscillation for the swinging of the boat while at work; a flexible joint near the pivots; a discharge-pipe consisting of an inner flexible oscillating section; a series of sections flexibly joined together and supported by floats, and an outer rigid non-oscillating section; a suction-pipe; a rotary excavator having inward delivery; the arc-shaped cuts of the excavator made by the dredge while swinging from side to side on the pivot, and devices f[illegible] its working with a side feed. All of these are also shown in the complainant's patent 318,859. In 1868 the complainant made four models showing different forms of construction of his invention; marked M[2], M, N, and I, I, respectively, and which were introduced in evidence and are inserted in the margin.[2] While these models show details of construction not shown in the drawings upon Exhibits DD, and EE (II), among other things, showing the inner cylinder at the end of the suction-pipe partially cut away, and N showing it entirely removed and N also showing the trunnions of Claim 59 of Patent 318,-859), they each and all embody the principle of the invention represented by those drawings and the memoranda thereon. All of this antedated by many years the defendant's patent for his first dredger, as well as his plans and model therefor, which, according to the averments of his answer, were not made until the years 1874 and 1875, respectively. Hence it cannot be true that the complainant got his ideas from any model or machine of the defendant.

The complainant did not, however, make any application for a patent for his invention until December 9, 1876. But

from the time of its conception he was indefatigable in his efforts to perfect it and to demonstrate its practical utility. His long delay in applying for a patent, the appellant contends, constituted an abandonment of whatever invention was made by him. To review the many pages of evidence going to show the reasons for the delay in the complainant's application would serve no useful purpose. It is enough to say that, so far from showing any intentional abandonment on the part of the complainant, they show the most persistent and continuous efforts on his part, against very adverse circumstances, to perfect the invention and avail himself of its benefits, and excuses the laches with which he might otherwise be justly charged. It was so held by the Patent Office, where the question of abandonment was raised and was decided in favor of the complainant. "No general standard by which diligence can be established has been established by the law. Nor, in the nature of things, is such a standard possible. It must be reasonable under all the circumstances of the particular case in question. The character of the invention; the health, the means, the liberty of the inventor; his occupation upon kindred or subordinate inventions—are proper subjects for consideration. Such reasonable diligence does not involve uninterrupted effort nor the concentration of his entire energies upon the single enterprise." Robinson on Patents, section 387.

The original application of the complainant for a patent for his invention was filed in the Patent Office, as has been said, December 9, 1876. It embraced a description of his invention and claims and was accompanied by a model. The original specification and claims were prepared by the complainant's attorneys and met with objections in the Patent Office. After amendments by the attorneys the Patent Office allowed twenty of the fifty-four claims embraced in the application. The complainant refused to accept the claims as allowed, on the ground that they failed to properly cover his invention, and allowed his application to lapse by failing to pay the government fee within six months after the allowance; but within two years after that date, to wit, April 16, 1879, he filed a renewed application for letters patent for his said invention, asking therein that the original specification, oath, drawings and model be used as a part thereof. Based upon the renewed application the Patent Office demanded of the complainant's attorneys further description and illustration of the invention which the attorneys insisted was unnecessary. Much correspondence ensued between the attorneys and the Patent Office upon that

question, and finally the complainant concluded to take personal charge of his application, and accordingly addressed to the Commissioner of Patents the following communication:

"613 Mission Street, San Francisco, June 13, 1882.
To the Commissioner of Patents, Washington, D. C.:

Sir:—Unable to fee attorneys to prosecute my cases at the Patent Office, they hang fire, while I grow grey. It becomes necessary for me to do the best I can with them myself. The power of attorney heretofore granted by me to Dewey & Co., of San Francisco, and A. H. Evans, of Washington, D. C., is hereby revoked in the case of the renewal application for improvements of dredging machines. Ignorant of the changes that may have been made in specifications or drawings, I inclose $5 for copy of contents of the file-wrapper. I cannot give the serial number. Respectfully,

A. B. Bowers."

On the next day, June 14, 1882, the complainant sent to the Patent Office a communication amending his specification "by striking out all thereof save the signatures, preparatory to submitting a new specification in accordance with the views of the Examiner;" and on July 26, 1882, he filed in the Patent Office the new and substituted specification. The Examiner having found that the specification as thus amended included new matter not disclosed in the original application, the complainant struck out all of the amended specification except the signatures, and on November 13, 1882, filed a second new and substituted specification. Much correspondence thereupon ensued between the Patent Office and the complainant, resulting in the complainant going to Washington in person, and there, concluding that his invention could not be covered by a single patent, and that several patents would be necessary to properly cover it in all of its parts, determined to, and accordingly did, divide his application into several divisional applications. The first divisional application so filed by him culminated in patent numbered 318,859, issued May 26, 1885. His second divisional application was patented on the same day, May 26, 1885, by patent numbered 318,860, for "The Art of Dredging." His third divisional application embraced all the remainder of his original application not comprised in the first and second divisions. This third divisional application was filed April 29, 1885, while the original application was pending and before the issuance of any patent. In the prosecution of his third divisional application it was found that several independent inventions were described and that it, too, would have to be divided accord-

ingly. The complainant divided it into nine different divisions and filed divisional applications therefor while the third divisional application was pending and before the issuance of any patent therefor. The second of the last mentioned divisional applications was filed August 3, 1886, and patented December 28, 1886, as number 355,251, which is the second patent sued upon herein.

The defendant, on July 3, 1876, made application for a patent for an improvement in dredging machines and for such improved dredging machine a patent was issued to him December 19, 1876, and is numbered 165,600. It is conceded by both parties to the present controversy that nothing covered by that patent to the defendant constitutes any infringement of the invention claimed by the complainant. Subsequently the defendant applied for a patent for a new and improved Excavating Curved Rotating Plow for Submarine Work, and on May 8, 1883, a patent therefor was issued to him and numbered 277,177. Two other patents were afterwards issued to the defendant—one of date June 10, 1884, for a new and useful improvement in dredging machines, and the other of date October 7, 1884, for a new and useful improvement in Rotary Plows for Submarine Work. Under his patents the defendant built and operated two machines. The first machine so built and operated by the defendant was confessedly no infringement of anything patented to the complainant; and if, as is contended by the counsel for the appellant, the second machine built and operated by him "with the exception of having a greater capacity and more power was built just like" his first machine, it would follow necessarily that the second and only other dredging machine built or operated by the defendant within the State of California could no more be an infringement of anything patented to the complainant than was his first dredger. But is that assertion of the counsel for the appellant correct? The defendant's first machine was built in 1876 in accordance with his patent 165,600. The machine there patented and as thus constructed had no self-contained pivot, and, of course, no devices for swinging or for working the boat on such pivot; nor did it contain any floating or submerged discharge-pipe. Its excavator, while rotary, consisted of radiating arms, the effect of which was the exact reverse of that of inward delivery. The defendant states in his patent for his second invention that it "has for its object to so construct the plow that when connected with any suitable scow or float and properly geared with any suitable driving mechanism, it may be readily rotated; and with these ends in view my in-

vention consists of a rotary plow so curved on the landside that the rotary sweep of the plow will be within the circle described from the axis of motion of the plow"; and in his specification he proceeded to describe the construction and operation of the plow, referring by letters to the drawings accompanying the same, as follows:

"A represents a series of plows made in the ordinary manner, except that the landside *b* is curved in a line drawn from the axis of motion of the rotating ring support. These plows A are secured in position by vertical plates B and screw bolts *a* to circular frame or ring D, formed with radial wrought iron arms C and hub H, the latter being secured by a feather, or in any other suitable manner, to a vertical hollow shaft E provided near its upper end with a bevel-gear meshing with a similar gear on the end of a horizontal driving shaft which may be driven by an engine on the scow or float. The vertical hollow shaft E is secured by any suitable means to bearings on the side of a vertical frame, which in the instance illustrated in the drawings, consists of a hollow tube J, the lower end of which is provided with a foot-valve K, and within this tubular frame may be arranged a suction-dredging tube I, the frame J and tube I being so arranged with reference to the ring-frame D of the plows that the material loosened by the plows will be dredged from the center.

"It will be observed that the landside *b* of the plows, being curved, causes the sand, mud, &c., loosened by the plows to be swept to the center, where it can be readily acted upon by the dredge.

"L is a hood arranged over the plows and their supporting ring-frame D to protect the same, and the plows are set at an angle, so as to cut slightly outside said hood.

"To the upper end of the hollow shaft E, I connect, by a swivel-coupling F, a hose G, which I employ to conduct a stream of water under pressure, should the plows A be caved in on, this stream of water, as will be readily understood, serving to break up and scatter the sand or mud where it acts as an impediment to the action of the plows. The channel cut by the plows will be in the direction of the movement of the float or scow, on the same principle as a metallic 'routing machine.'

"I do not, of course, wish to limit myself to all of the exact details of construction shown, as they may be varied in many particulars without departing from the spirit of my invention—as, for instance, while I have shown the supporting frame of the vertical shaft E as constituting a hollow tube with an exhaust

or suction dredge-tube arranged within the same for the purpose of removing the material plowed up by the plows A, I may substitute therefor any suitable supporting frame and employ any desired independent mechanism.

"I have shown the ring-frame D armed with four plows A; but I do not wish to be confined in this particular, as a greater or less number of plows may be employed, the gist of my invention resting in the idea of the rotary plows formed with a curved landside and connected with a rotary frame so that they may be rotated from a central driving-shaft, and in combining with such arrangement a means for flushing and disintegrating the material cut up by the plows by means of a stream of water under high pressure."

The claims embraced in the defendant's patent 277,177, are as follows:

"1. The plows A, provided with landsides *b*, curved to conform to the circle of their rotation, in combination with a rotary frame or ring D, and driving shaft E, substantially as and for the purpose set forth.

"2. In combination with the plows A, provided with curved landsides, as described, and the revolving frame or ring D, the driving hollow shaft E, and suitable hose and connections, C, F, substantially as and for the purpose set forth."

That the plows of this patent, unlike the excavator of the defendant's first patent, have an inward delivery through itself to a non-rotating suction-pipe is plain; and, indeed, it is, in effect, so declared by the defendant himself in his specification above quoted; for he says: "It will be observed that the landside, *b*, of the plows, being curved, causes the sand, mud, etc., loosened by the plows, to be swept to the center, where it can be readily acted upon by the dredge."

These specific devices thus described by the defendant in his specification, and for which his patent 277,177 was issued, and which were afterwards embodied by him in his second machine, not being specifically described in either of the complainant's patent, it is urged on the part of the appellant that no infringement of those patents is thereby shown. If the complainant is to be limited to the specific devices described in his patents, that would undoubtedly be true; but, as has already been said, he was the first to invent not only a rotary excavator having an inward delivery through itself to a suction-pipe, but also of the combination of such an excavator with transporting and discharging devices by means of which hard material in place can be severed, lifted, and continuously carried over water or land to any desired place of deposit. He

is, therefore, justly entitled to be regarded as standing at the head of the art in those respects, and to a broad and liberal construction of his claims thereto. So regarding him, the objections of the appellant to the validity of the complainant's patents are not well taken. Those most urged are that the complainant's claims are merely for functions and results, and that they constitute aggregations only.

By Section 4888 of the Revised Statutes it is provided that every inventor, when making his application for a patent shall file in the Patent Office a written description of his invention, and if the application be for a machine, he is required to explain the principle thereof and the best mode in which he has contemplated applying the principle, so as to distinguish it from other inventions. But he is not necessarily limited to the one mode shown. The pioneer inventor is entitled to a generic claim, under which will be included every species included within the genus. In addition to such generic claim, he may include in the same application specific claims for one or more of the species. (*Morley Machine Co.* vs. *Lancaster*, 129 U. S., 263; *Clough* vs. *Barker*, 106 U. S., 166; *Clough* vs. *Manufacturing Co., Id.*, 178; Robinson on Patents, Sec. 535; *Hammerschlag* vs. *Scamoni*, 7 Fed. Rep., 584; *Bell Telephone Co.* vs. *Spenser*, 8 Fed. Rep., 509; *Standard Measuring Co.* vs. *Teague*, 15 Fed. Rep., 390; *Warswick Manufacturing Co.* vs. *Buffalo*, 20 Fed. Rep., 126; *Brush Electric Co.* vs. *Electric Improvement Co.*, 52 Fed. Rep., 965; *Ex-parte Nagle*, Com's Dec. 1870, page 137; *Ex-parte Howland*, 12 O. G., 889.)

When the complainant claimed in Claim 10 of his patent, 318,859, "a dredge-boat having a self-contained pivot forming a center of horizontal oscillation, with devices for swinging and working said boat upon said pivot, in combination with a suction-pipe, exhausting apparatus and rotary excavator," he was not claiming a result, which, of course, he could not do. Nor did he thereby limit himself to any particular form of construction of the several devices therein mentioned. What he there claimed, and what he, as the first inventor of any combination that would accomplish the desired result had a right to claim, was, the combination of a dredge-boat itself, containing a pivot forming a center of horizontal oscillation, with devices for swinging and for working the boat on the pivot, a rotary excavator for the severing of the material in place, a suction-pipe for its receipt and transmission to the exhausting apparatus, and the latter for the transportation and discharge of the spoils to the desired place of deposit. The record shows that the complainant was the first to combine those elements

at all, and that the functions performed by his machine so constructed were entirely new. Hence, he had the right to make the broad and generic claim embodied in Claim 10, without any limitation as to the form of construction of the particular elements, and all subsequent machines which employ substantially the same means to accomplish the same result are infringements, notwithstanding the subsequent machine may contain improvements in separate mechanism which go to make up the machine. (Authorities *supra*, and *McCormick* vs. *Talcott*, 20 How., 402; *Railway Co.* vs. *Sayles*, 97 U. S., 554; *Clough* vs. *Barker*, 106 U. S., 166; *Valve Co.* vs. *Valve Co.*, 113 U. S., 157.) Of course, it remained open to any subsequent inventor to accomplish the same result by substantially different means.

Claim 16 of the complainant's patent 318,859 is a combination of a dredge-boat, a floating pipe, a land-pipe and a flexible joint between them. The same combination was, for the first time in the history of the art, made by the complainant July 13, 1864, and illustrated by the drawings and memoranda upon exhibit DD.

Claim 25 is for a combination of a discharge-pipe consisting of a series of sections flexibly joined together, floats for supporting the pipe on water, and a dredger having a rotary excavator.

Claim 53 is for a combination of a non-rotative suction-pipe with a rotary excavator having an inward delivery through itself.

Claim 54 added to the combination covered by Claim 53 a dredge boat; and Claim 59 added to the combination covered by claim 53 trunnions or equivalent joints, to permit the excavator and outer ends of the suction-pipe to be raised and lowered to suit the depth at which the work is progressing. The trunnions embraced by Claim 59 are not shown in the complainant's drawings of 1864, but are shown in the model N, made by him in 1868, and is thus described in his specification:

"The swinging portion of this (suction) pipe is mounted at the inner end of the well upon strong trunnions, one of which forms an elbow of the pipe and passes through a stuffing-box, or other suitable connection, into the suction-pipe of the pump B. Through the other trunnion passes a shaft that actuates the gears *i* that drives the shaft R and bucket-wheel E, and upon these trunnions the shaft R, suction-pipe and excavator swing as the cutter is raised or lowered to suit the depth at which the work is progressing."

Claims 13, 17 and 18 of the complainant's patent 355,251,

found by the Court below to have been infringed by the defendant, are as follows:

"13. In combination, a dredge-boat, exhausting device, telescoping suction-pipe, and a rotary excavator provided with detachable cutting-edges.

"17. In combination, a dredge-boat, exhausting device, telescoping suction-pipe, and a swinging section of discharge-pipe flexibly joined to the boat and to an outer stationary section, to allow said boat to feed forward and said oscillating pipe to swing on the joint connecting the oscillating and non-oscillating sections.

"18. In combination, a dredge-boat, exhausting device, telescoping suction-pipe, rotary excavator and a swinging section of discharge-pipe flexibly joined to the boat and to an outer stationary section, to allow said boat to feed forward and said oscillating pipe to swing on the joint connecting said oscillating and non-oscillating sections."

The element here introduced that is not embraced by any claim of patent 318,859 is a telescoping suction-pipe, which is thus described in the specification contained in patent 355,251: "*c* is a suction-pipe provided with an elbow and telescoping section or sections c^1. It is also provided with stiffening slide-rods *t*, *t*, *t*, that pass through suitable slides or guides at the top and bottom of the elbow, and at the lower end of each telescoping section, except the lowest, to the latter of which they are firmly secured by strong fastenings. These slide-rods are large and strong, to keep the telescoping sections of pipe and the bearings of the excavator-shaft in line and insure their easy working. The joints of the telescoping sections are placed below the surface of the water, to obviate the necessity for stuffing-boxes and packing. This pipe is also provided with a hollow (generally a rotary) excavator, that delivers its spoil inward through itself to said pipe. It is further provided that the chain *i*, secured to the lower end of the lowest telescoping section, and passing over suitable sheaves to a hoisting device, by means of which it is raised and lowered in the process of dredging. Similar chains are attached to the lower ends of the intermediate telescoping-pipes and to some suitable point above, to prevent said intermediate pipes from dropping out of the pipes above them."

While the telescoping suction-pipe was old, the record shows that the complainant was the first to combine it with the other elements of the several combinations specified in Claims 13, 17 and 18 of patent 355,251.

In no just or proper sense can any of the combinations de-

scribed in the complainant's claims involved on this appeal be said to be mere aggregations, for the reason that the result is the product of the combination, each element affecting the action of the others and all of them co-operating in the one result of severing by the forward and side action of the machine the material in place where it is not wanted and depositing it in another place where it is wanted. The flexible joints of the floating discharge-pipe and the vertical anchors or turntable, as the case may be, permits the movement of the machine from side to side, as well as forward, and in combination with the other elements specified makes possible the continuous cutting and lifting of the material in place and its continuous transportation to the desired place of deposit. No combination of elements that so operate can be regarded as a mere aggregation, for each one has a direct influence upon the action of each of the others, the result necessarily being the product of the combination itself and not a mere aggregate of several results each the complete product of one of the combined elements. (*Hailes* vs. *Van Wormer*, 20 Wallace, 352; *Royer* vs. *Roth*, 132 U. S., 201; *Reckendorfer* vs. *Faber*, 92 U. S., 347; *Beecher Manufacturing Co.* vs. *Atwater Manufacturing Co. et al.*, 114 U. S., 524.)

The contention that the complainant limited the form of his excavator so as to avoid an interference with the defendant in the Patent Office, is not supported by the evidence. That he amended it is true, but not for the purpose stated by the counsel for the appellant. As amended it described the *excavator* as shown in the drawings of July 13, 1864, and also as shown by the model N, made by the complainant in 1868—one form containing an inner chamber at the end of the suction-pipe, and the other showing the chamber cut away until only enough remains to support the excavator and its shaft; both having an inward delivery, the first to be used when the spoils do not require a large percentage of water to carry them up to the suction-pipe, and the second when they do. The clear meaning of a claim to an excavator having inward delivery, or with inward delivery through itself, is to an excavator so constructed as to produce an inward delivery. The terms "inward delivery" have direct reference to the mechanism itself, and cannot be properly limited to the description of the action or effect of such mechanism.

The contention on the part of counsel for the appellant that no successful machine can be built and operated in accordance with the complainant's patents is not at all supported by the Record, which contains abundant evidence to the effect

that machines have been so built and have ever since been operated with very great success. The fact, if fact it be, that the first machine built by the complainant, called in the Record the Davis Machine, was not successful in its operation is unimportant. As was well said by the Court in answer to a similar objection in the case of *Merganthaler Linotype Co.* vs. *Press Publishing Co. et al.*, 57 Fed. Rep., 502, 506: "It would certainly be a novel doctrine to deny to an inventor the fruits of a broad invention because the machine which first embodied it was rudimentary in character and failed to do as good work as improved machines made subsequently. None of the great inventions could survive such a test. Ten years after the invention of Howe, the machine first made by him would hardly have satisfied the least exacting sewing-woman. The Dodds and Stephenson locomotive would, only a short time after its construction, have been discarded as behind the age even by the savages of Tasmania. The telephone of Bell is not the perfected telephone of commerce. The Morse telegraph is looked upon to-day as an interesting antique. And yet, it would be an unheard of proposition to withhold from these illustrious men the credit they deserve because their machines were crude at first and were improved afterwards."

Giving to the complainant's patents the broad and liberal construction to which we think them justly entitled, it is clear that the second machine of the defendant constitutes an infringement of the complainant's excavator with an inward delivery and of the combination claims of the complainant's patents adjudged by the Court below to have been infringed.

The judgment is affirmed.

[Endorsed]: Opinion. Filed January 4th, 1897.
F. D. Monckton, Clerk.

Office Supreme Court, U. S.
FILED.
MAR 22 1897
JAMES H. McKENNEY,
CLERK.

166-720

No. 754

October Term, 1896.

UNITED STATES SUPREME COURT.

Ex Parte ALLEXEY W. VON SCHMIDT,

Petitioner.

IN EQUITY.

BRIEF OF PETITIONER.

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IN THE SUPREME COURT

OF THE

UNITED STATES.

IN THE MATTER OF THE APPLICATION OF ALLEXEY W. VON SCHMIDT FOR A WRIT OF CERTIORARI.

Brief of Petitioner on his Application for said Writ.

This is an application for a writ of *certiorari* directed to the United States Circuit Court of Appeals of the Ninth Circuit and the Judges thereof in the case of *Allexey W. Von Schmidt, defendant and appellant*, vs. *Alphonso B. Bowers, complainant and appellee.* The object of this application is to obtain a review of the decree of the Circuit Court in and for the Northern District of California, and the decision of the said Circuit Court of Appeals affirming such decree.

The action was brought by said Bowers as complainant against the said Von Schmidt as defendant, to obtain relief for an alleged infringement of two United States Letters Patents, granted for alleged inventions in dredging machines.

The patents were both granted to A. B. Bowers as the inventor; they are Patent No. 318,859, bearing date May 26, 1885, and Patent No. 355,251, bearing date December 28, 1886.

The action was commenced November 12, 1888.

After the suit was commenced the pleadings were amended and changed to a considerable extent. The amended bill of complaint on which the case was tried is in the Record from page 17 to page 26. The amended and engrossed answer is the answer on which the case was tried, and it is in the Record from page 96 to page 106. A replication was duly filed. Record, pages 106 and 107.

The material facts applicable to this application are as follows: In 1874 the petitioner Von Schmidt made a plan of his dredging machine and filed a caveat in the Patent Office describing the same. On July third, 1876, he filed an application for a patent in accordance with his caveat. Immediately after that date he built a dredging machine according to his said plans

for General Thomas H. Williams. The machine was built in San Francisco and was worked in the waters of San Francisco bay to test the machine and Mr. Bowers saw it there at work. The machine worked successfully, and afterwards, in October, 1876, Von Schmidt took the machine up to San Joaquin County and set it at work for said Williams and David Bixler, who was the partner of said General Williams. Said Williams and Bixler owned a very large amount of swamp and overflowed lands and they used the machine for reclaiming those lands. The machine worked continuously for said Williams and Bixler in reclaiming their lands from October 1876, until 1882. It built many miles of enormous levees that were forty feet wide at their base, eight feet wide across their top and twenty to thirty feet high. It also built up several acres of high mounds that were fifteen feet high. In 1882 Williams & Bixler desired to make a canal through their land where the surface of the land was too high for the cutter of the machine to reach, and the machine was then changed to what was called an "Atlas" dredger by applying to it a vertically swinging suction-pipe and a rotary cutter that had been invented by, and was afterwards patented to Horace B. Angell. In 1882 said Von Schmidt built another one of his dredgers and made certain changes in its rotary cutter. He made the machine larger and more powerful than his first dredger and made changes in the rotary cutter, but otherwise it was the same. He has used the said dredger made in 1882 ever since, and is still using it.

These are all the dredging machines that Von Schmidt has made or used since Mr. Bowers made any inventions in dredgers.

Von Schmidt filed an application for his first patent July third, 1876, and obtained the patent December nineteenth, 1876. He afterwards obtained two more patents for the changes that he made in his rotary cutters in 1882.

The complainant, Bowers, first filed his application for a patent December ninth, 1876, just ten days before Von Schmidt's patent was granted, and before he, Bowers, had built any dredger. In 1878 Mr. Bowers built his first dredger with means furnished to him for that purpose by Alfred E. Davis, who was a part owner in the narrow-gauge railroad that runs from San Francisco to Santa Cruz. This dredger was an experimental one, and the testimony shows that it was a failure, although Mr. Bowers himself testified it was a success. Neither he nor his licensees ever built another like it, and Mr. Davis lost some twelve thousand dollars that was used by Mr. Bowers

in building the machine. The last two facts are proved and are undisputed.

After his said experimental machine of 1878 neither Mr. Bowers nor any licensee under him nor any one else built any dredger in accordance with Mr. Bowers' plans until the year 1886 or 1887, when Mr. Bowers changed largely his original plans and other dredgers were built by his licensees, and they have since then been successfully used.

Mr. Bowers first applied for his patent December ninth, 1876, and his specifications as filed contained fifty-four claims. Under the rejections and references of the Patent Office Mr. Bowers and his attorneys changed his claims and reduced their number to twenty. The Patent Office allowed the twenty claims and ordered the patent to issue with those twenty claims upon the payment of the final government fee of twenty dollars. Mr. Bowers *did not* pay the final fee within the six months allowed by law—Revised Statutes, Sec. 4885—and his application lapsed. Within the two years allowed by section 4897 Mr. Bowers undertook to renew his application by simply writing a letter to the Patent Office stating that he "now makes renewed application for letters patent for said invention" and praying that the original specification, oath, drawings, and model might be used as a part of the application. No new specifications were filed, nor was any new oath of the applicant filed. The Patent Office accepted the letter as a sufficient renewal of the application.

After the renewal Mr. Bowers changed his specifications and drawings and claims so as to include new subject matters of invention, which not only had never been allowed to him by the Patent Office, but which had not been described or claimed in his original specifications or drawings at all. Long after such renewal he divided his application into several divisional applications, and took out his first patent with new drawings, and with new inventions described and claimed therein, and for which no patent had ever been ordered to issue upon the payment of the final fee.

Under the original specifications and claims that were filed in the Patent Office on the ninth day of December, 1876, the defendant's machine would not have been any infringement. It is only by virtue of the new alleged inventions that were inserted in the specifications and claims, several years after the renewal application was made, that an infringement has been adjudged.

The machine of the defendant Von Schmidt is very different from that described in the Bowers patent, and an infringement

is adjudged of several of the claims upon the ground that the term "inward delivery" as applied to the rotary cutters is mechanism and not an effect of mechanism. It is an undisputed and conceded fact that there is no mechanism or combination of mechanism in the defendant's cutters that was ever invented by Mr. Bowers, or that is described or claimed in his patents. The infringement of said claims is claimed by Bowers and is adjudged solely upon the ground that the Bowers rotary cutter produces an "inward delivery," and in his claims he claims any and all rotary excavators that produce an "inward delivery," no matter how made or constructed.

The defendant Von Schmidt denies that the law allows such an interpretation to be given to the claims. In addition to this he denies that his rotary cutters have any "inward delivery," within the meaning of the term, as it is contained in the Bowers patent. The Von Schmidt cutters are described in his patents, and how they compare with the Bowers patented cutters is ascertained by a comparison of the patents.

In an old sand-pump dredging apparatus there was a rotary pump, a suction-pipe and a discharge-pipe through which the spoils were driven by the rotary pump, the three devices being combined and operating just the same as the rotary pump, the suction-pipe and the portion of the discharge-pipe that is fixed permanently upon the dredger boat are combined and operate in both the Bowers and Von Schmidt dredgers. Both parties have used a floating discharge-pipe that is attached at one end by a flexible connection to the end of the discharge-pipe that is fixed permanently on the boat. The defendant claims that such extension of the discharge-pipe constitutes only an unpatentable aggregation having no joint action with the rotary cutter or even with the dredge-boat, or with the rotary pump. Mr. Bowers claims and the said Courts have adjudged that said addition of the discharge-pipe created new mechanical combinations that are patentable.

Mr. Bowers in order to carry his alleged inventions in point of time away back of inventions that had been made and patented to others put in evidence the two drawings with the writing contained on the faces thereof which are marked as Exhibits D; D, and E, E. He testified that these drawings were made by him in the month of July in the year 1864. He also put in evidence the models that are marked as Exhibits M and N, and I, I, and testified that they were made early in the year 1868. The said courts held and adjudged, as shown by the opinions filed by them, that the said drawings and the said models constituted full inventions, and that they carried the date of his

patented inventions back to the time at which he testified that the said exhibits were made.

It is under these several interpretations of the law, and of the said patents that the following questions arise which are the questions that the petitioner prays this Honorable Court to take jurisdiction of and to decide, viz.:

First. Under section 4897 of the revised statutes, has the Commissioner of Patents jurisdiction or power to allow a renewal application to be filed without any new specifications and without any new oath?

Second. If the Commissioner does have such power does he have jurisdiction or power to allow after the renewal new inventions to be described and claimed in amended specifications, which new inventions were not described or claimed either in the original specifications that were filed or in any amendments thereof which were made prior to the renewal, and for which no patent had been ordered to issue upon the payment of the final fee?

Third. Did the said Circuit Court and Court of Appeals err in deciding that the new inventions could be added to the specifications after the lapse of the original application and the subsequent renewal thereof?

Fourth. Did the said Courts err in deciding and adjudging that the drawings that were made by Mr. Bowers in 1864 and the models that were made by him in 1868 constituted full inventions that superseded and anticipated the inventions of Von Schmidt in inventing and building his own dredgers in the years 1876 and 1882?

Fifth. Did the said Courts err in holding and adjudging that the second machine of Von Schmidt was an infringement of the patent sued on under the proven and admitted fact that there was no mechanism or combinations of mechanism, or equivalents of any mechanism, or any combinations of mechanism contained in the said machine of Von Schmidt that the said Bowers had ever invented or that were described or claimed in either of the patents sued on?

Sixth. Did the said Courts err in holding and adjudging that each and every one of the claims of the patents sued on, which were adjudged to be infringed, covered patentable combinations instead of unpatentable aggregations only of mechanical elements?

Seventh. Did the said Courts err in holding and adjudging that the addition of the extension of the floating discharge-pipe to that part of the discharge-pipe that was permanently fixed on the dredger boat constituted a patentable combination

with the rotary cutter and other mechanical devices instead of only an unpatentable aggregation?

Eighth. Did the said Courts err in holding and adjudging that the vertical spud was a center of oscillation that was "self-contained" by the dredger?

The file wrapper—Exhibit J, J—is in evidence, and from that it is seen that Mr. Bowers filed his application for a patent December 9th, 1876, with fifty-four claims. That under rejections, etc., of the Patent Office he changed and amended his application until it was allowed with twenty claims on the 16th of April, 1877. A copy of the letter of the Patent Office to Mr. Bowers notifying him of the allowance is Exhibit B, E, at page 165 of the book of exhibits, which exhibit book is filed herewith duly certified. That April 16th, 1879, the renewal, or attempted renewal, of the application was made. Said renewal consisted of the filing of a letter only of which the following is a copy, viz.:

" To the Commissioner of Patents:

" Your petitioner represents that on December 11th, 1876, " he filed an application for letters patent for an improvement " in dredging machines, which application was allowed April " 18th, 1877, but that he failed to make payment of the final " fee within the time allowed by law.

" He now makes renewed application for letters patent for " said invention and prays that the original specification, " oath, drawings and model may be used as a part of this " application.

" ALPHONSO B. BOWERS."

No specifications, drawings or oath were filed with this renewal, and the letter was the only renewal that was made or attempted.

First Point.

Petitioner contends first that the attempted renewal was insufficient to bestow jurisdiction on the Commissioner of Patents to entertain or act upon under the law.

The only provision for the renewal of an application for a patent after the same has once been allowed to lapse for non-payment of the final fee is found in section 4897 of the Revised Statutes, that is in the following language:

"Any person who has an interest *in an invention or discovery*, " whether as inventor, discoverer or assignee, *for which a patent* " *was ordered to issue* upon the payment of the final fee, but " who fails to make payment thereof within six months from " the time at which it was passed and allowed, and notice

" thereof was sent to the applicant or his agent, shall have a " right to make an application for a patent *for such* invention " or discovery the same as in the case of an original applica- " tion. But such application must be made within two years " after the allowance of the original application."

Under the provisions of this section we contend that the new application must be made "*the same as in the case of an original application,*" that is by filing a specification and drawings and making the statutory oath. The section says that he shall have a right to make the application for a patent for the invention for which a patent had been ordered to issue upon the payment of the final fee "the same as in the case of an original application." The original application could only be made by filing the specifications, drawings and oath. In the manner in which Mr. Bowers attempted to renew his application no one could tell what inventions he was making his application for. He prayed leave to use the original specifications. Those original specifications had been greatly changed after they were filed. Did his renewal application refer to those original specifications as they were when they were first filed, or did it refer to them as they were after they were so largely changed that more than half their claims had been taken out of them?

This section has never been construed by this Court so far as we have been able to find, and we submit the question to the Court without further argument as to whether or not the mere filing of a letter in the Patent Office stating that the writer renewed the application, and praying that the original specification, drawings and oath might be used as a part of the application, was a compliance with said section 4897 or not.

Point Two.

The more important point which involves the construction of said Section 4897, however, is this: After the renewal application is made, has the Commissioner of Patents any power or authority to allow the specifications to be amended and new inventions put into the renewal application, which inventions were not described or claimed in the original specifications, either as they were originally filed or as they were amended prior to the time when the renewal was made?

The Circuit Court decided that such new matters could be put into the amended specification for the first time after the renewal, and the said Court of Appeals has affirmed that decree.

We can find but very little in the way of adjudications under this Section 4897 of the revised statutes.

In *Weir* vs. *Marden*. 21 Fed. Rep., 243, the patent sued on was applied for in October, 1877, and on December 2d, 1877, it was allowed with certain claims. In February, 1879, the application was renewed, with a request that the original specifications and drawings might be considered a part of the application, and the patent issued May 20th, 1879. Afterwards it was reissued.

The Court held in substance that the patent was anticipated and that it was not infringed. Towards the end of the decision it states in substance that the application for the patent must be deemed to have been first made at the time and not before the time when the renewed application was filed. That in such case there could be no doubt that the patented device had been in public use more than two years before the application was filed.

If this position is correct there can be no doubt but that Von Schmidt's first machine with the spud for a vertical anchor to swing on had been in extensive public and successful use more than two years before Mr. Bowers made his application.

In Walker on Patents, Sec. 147, he states that the question as to whether the renewed application will be regarded as a continuation of the original application in cases where the invention had been in public use more than two years before the renewed application was filed though less than two years before the original was filed is not answered in any adjudicated case.

The sections in Walker on Patents which we have found that refer to renewal applications under said Sec. 4897 of the revised statutes, are sections 125, 146 and 147.

In these sections, however, are references to the two years' delay in taking action *in the Patent Office after the rejection of a patent* is also treated of, and care should be taken not to confound one lapse of two years' time in which to make the renewal application with the other lapse of two years' time in which action must be taken after a rejection in the Patent Office. The one provision applies to applications which have been *allowed*, and the other to applications which have been *rejected*.

There are authorities also upon independent applications which have been made for patents which have been rejected and withdrawn and in other cases in which the issue of laches on the part of the patentee has been raised. But we cannot find any direct decisions of the courts which give a construction of said section 4897 as to that portion which provides that the renewed application may be made for the invention for which a patent had been ordered to issue upon the payment of the final fee.

Robinson on Patents, Sec. 584, states that the second application is not considered as a continuation of the former, but will bear date from the time of the renewal and will be examined and passed upon like an original application. He, however, refers for his authority to *Thompson* vs. *Waterhouse*, 30 Official Gazette, 177, which seems to decide just the other way.

The nearest that we can find to an adjudication that gives a full construction to said Sec. 4897 is the decision of the Commissioner of Patents in the case just mentioned of *Thompson* vs. *Waterhouse*, 30 O. G., 177.

In that decision the Commissioner holds that the renewed application is a continuation of the original application and disagrees with the argument of counsel that the renewed application could not be treated as a continuation of the original. See lower part of first column of the decision, page 177, and also first column of page 178. The case does not seem to justify the text of Robinson on Patents for which he cites it, but to be just the contrary. Robinson must have taken the Commissioner's statement of the argument of counsel in the case for the decision of the Commissioner.

The decision is very strong to the effect that the renewed application under said section 4987 *must be for the same invention for which a patent was ordered to issue* upon the payment of the final fee, and that *it cannot be for anything more*. The decision contains a strong and sensible argument to sustain its position. It adheres to the language of the section and to its plain evident meaning.

But while there seems to be no sufficient adjudications by the Courts giving a construction to the said section 4897, there are, we think an abundance of adjudications upon an analogous provision of the patent laws, and which are amply sufficient to sustain our claim that the said section *means what it says* and that the renewal application under it must be for a patent *for the invention for which a patent was ordered to issue* upon the payment of the final fee, and that the Commissioner of Patents had no jurisdiction to grant any patents under the renewal application other than such as covered the inventions for which the patent had been ordered to issue. That under any possible construction no valid patents could issue for any thing *that was not shown, or described or claimed in the original application* that was filed December 9th, 1876.

We refer to the numerous and familiar decisions of this Court on reissued patents, and which decisions we think are upon an analogous subject matter and they are therefore applicable to the construction of said section 4897 as to what inventions can

be covered under renewed applications. The Court is too familiar with them to require citations of them.

As this section has never been construed by this Supreme Court, and scarcely any authority can be found upon the point we are now making, we have to submit the construction of the section to the Court upon its own provisions and language.

According to the provisions and language of this section the patentee can only make a new application for the *same invention for which a patent was ordered to issue*. This is the very language of the section and is a limitation upon the invention which the new patent may be applied for. That the patentee ought to be confined in his application to that by which the patent was ordered to issue seems but common justice. The original application usually is, and was in this case, thoroughly examined by the Patent Office, and after repeated amendments an allowance was made to Mr. Bowers of twenty claims. In the application as filed he made no less than fifty-four claims. As shown by the file-wrapper contents he was shown references which anticipated many of his claims, and he amended the same until he reduced the number to twenty, and for those twenty claims his patent was allowed. It was for *those twenty claims that covered the invention or discovery for which the patent was ordered to issue*. He could not, under the law, make an application for any other patent than that which *covered the invention for which the patent was ordered to issue*.

In noticing what that invention was, it is necessary to read the original specifications (they are copied in the printed Record, beginning on page 299 and extending to page 318), in connection with the drawings which were at that time filed, and which drawings are different from those in the patent. The drawings are Exhibit A M, at pages 133 to 140 of the volume of exhibits.

The claims as shown have to be read from the file-wrapper contents, which is an Exhibit in the case, and they are as follows:

" WASHINGTON, Apl 10, 1877.

" Hon. Commr. of Patents.

" In the matter of my application for Impt. in Dredging " Machines, filed Dec. 9, 1876, I hereby amend the specifica- " tion by *substituting for the several claims heretofore presented*, " *the following:*

" 1st. A rotary bottomless bucket excavator wheel E, hav- " ing its buckets formed to collect and deliver, or curved to " force the loosened material into the center where it is dis- " charged.

"2d. A rotary bottomless bucket excavator wheel E, in "combination with pipe C, and an inner hollow cylinder D, "having an opening G, in the side for the admission of excavated material.

"3d. In combination with the pipe C, with telescoping "section or sections S", I claim the sliding stiffening rods *t*.

"4th. In combination with the centrally discharging excavator wheel E, and inner cylinder D, with central division, "I claim the double suction discharging apparatus B', B".

"5th. In combination with a centrally discharging excavator wheel E, inner hollow cylinder D, having the opening G, "and pipes C, C, I claim the endless driving chain or chains *r*.

"6th. The cutting, protecting, supporting knives I, secured "to, and in combination with the excavating bucket E, substantially as described.

"7th. The detachable teeth or chisels J, in combination "with the buckets of an excavator wheel E, for the purpose "set forth.

"8th. The detachable teeth or knives K, secured to the "shaft F, and interior of the hollow cylinder D, for the purpose described.

"9th. The combination of the chain or hawser P, passing "from the counterbalance Q, under the suspending pulley N, "and to the windless W^1, in such a manner as to raise or lower "the dredging device without interrupting the action of the "counterbalance Q.

"10th. The device consisted of the arms M, M, extending "from the shaft N^1, to the shaft *o*, and forming with the pipes "C, C, a parallel motion whereby the horizontal position of "the wheel E is preserved, wherever it may be placed.

"11th. In dredging machines the combination of the "tapering drums X, X, and movable pulley Y, Y, with the "hawsers or chains A, A, and fixed or anchored pulleys Z, Z, "arranged substantially as shown and described.

"12th. The turn-table L, rotating in its well U, and provided with the vertical anchors V, V^1, passing through it at "opposite sides, so that the turn-table serves as a center, about "which to rotate the machine in feeding from side to side, "and also to feed the machine forward, by rotating the turn-table about one of the anchors.

"13th. The combination of the flexibly connected discharge-pipe C^1, joined to the apparatus near its center of "oscillation, and provided with its air tight floats *b*, with relay "pumps or safety valves, and having openings u^1 u^1, at the "discharge end, with the mouth pieces N^2.

" 14th. In a dredging machine the combination with the " pipe C^1, of the pipe, hose, and cock 4 and discharge-pipe 5, as " and for the purpose set forth.

" 15th. In combination with the pipe C^1, I claim the weigh- " ing tank *c*, with its connecting pipe, hose 20, stops 21 and " 22, and scales, substantially as and for the purposes de- " scribed.

" 16th. The combination of the submerged pipe C^1, the " buoys *f*, anchors and cables a^2, with the discharging ap- " paratus and the mouth piece N^2, arranged substantially as " shown and herein specified.

" 17th. In dredging machines the arrangement of the pipe " C^1, with the relay pump or discharging apparatus B^2, as " shown, and for the purpose herein set forth.

" 18. In combination with the pipe C^1, with the relay dis- " charging apparatus B^1, B^2, etc., I claim the safety valve V, for " the purpose of relieving the pipe C^1, in case of over pressure " from any cause.

" 19th. In combination with the receiver *x*, I claim the " flexible pipe or hose 4, with cock, for the purpose of dis- " charging water upon the top of the settled contents of said " receiver.

" 20th. In combination with the pipe C^1, I claim the pipe " P^2, and its connections, as and for the purpose described.

" Respectfully submitted,

" A. B. Bowers,

" By A. W. Evans & Co., Att'ys."

In defendant's machine there is not the rotary bottomless excavator wheel with buckets formed to collect and deliver, or curved to force the loosened material into the center, as called for by this first claim; nor the inner cylinder as called for by the second claim; nor the stiffening rods of the third claim; nor the double suction discharging apparatus of the fourth claim; nor the inner hollow cylinder or driving chains of the fifth claim; nor the knives secured to the excavator wheel, or the chisels of the sixth and seven clains; nor the knives on the inside of the cylinder of the eighth claim; nor the counterbalance or its connecting devices of the ninth claim; nor the devices for keeping the wheel in a horizontal position of the tenth claim; nor the tapering pulleys of the eleventh claim; nor the turn-table of the twelfth claim; nor the relay pumps or safety valve of the thirteenth claim, nor the pipe, hose and cock of the fourteenth claim; nor the weighing tank with its connections of the fifteenth claim; nor the anchors, buoys, cables or

mouth piece of the sixteenth claim; nor the relay pump of the seventeenth claim; nor the relay discharging apparatus, or safety valve, of the eighteenth claim; nor any of the apparatus for discharging water upon the contents of any receiver of the nineteenth claim; nor the pump P^2 of the twentieth and last claim. This pump is shown on the deck of the vessel in figure one of the original drawings. It is not the main pump of the machine, but another small affair.

By confining the complainant's patents to so many of the inventions which the original patent was ordered to issue for as are covered by his present patents, there could be no pretense that the defendant's machine infringed those patents. Of course, by not paying the final fee the former patent lapsed and none of it is in force. It was never issued. Nothing in it could be saved except by applying for and taking out a new patent for the same invention for which the former patent was ordered to issue. If the new patent covered more than the former patent was ordered to issue for, then the new patent would be void, at least, as to the new matter in it. If the new patent did not contain all of the invention for which the former patent had been ordered to issue, then such portions of such invention as were not covered by the new patent would be public property, and lost to the patentee.

The New Inventions that were Put into the Specifications After the Renewal Application was Filed.

In order to better understand the force of this point it is better to furnish the Court with a general and short description of the dredger machines in question.

The evidence shows that long before any of the inventions in question were made that there was a well known suction dredging apparatus that was known as a sand pump. It also shows that both the Von Schmidt dredger and the Bowers dredger were but this old sand pump with additions made thereto by putting a rotary cutter at the lower end of the suction-pipe and extending the discharge-pipe to any desired distance, thus making additions at both ends of the sand pump, but leaving its suction-pipe, rotary pump and discharge-pipe, as they were before.

The testimony is so strong on this proposition that it cannot be doubted. On page 1409 of volume III of the Record Mr. Dayton testifies in reference to the Von Schmidt dredgers, which he saw dredging from the Potomac river in Washington, D. C., that: "There was nothing in the arrangement of the

" suction-pipe so far as it was visible, or in any of the other " contrivances visible on a casual observation, which was all " I gave them, *all of these devices being old and familiar to* " *me from having examined various patents and publications re-* " *lating to dredgers, and I think from having seen somewhere a* " *sand pump contrived in substantially the same manner* with " reference to the oscillation of the sand pump about the bow " or one end of the boat."

On page 1411 he states that there is *no difference in a broad sense between the sand pump and a suction-dredger*, "sand pump being one form of dredge or dredger for a particular kind of material."

On page 1026, Vol. II, Calvin Brown testifies to the use of sand pumps where the material was brought up without any cutter at the end, and says, "that this is the only *kind of suction-dredger* that I have ever seen where an excavating apparatus was not necessary at the bottom." Also that *mud pumps and sand pumps worked by steam power were very old and very common.*

John Hatch testified in reference to the Bowers Alameda machine that the cutter would clog, and that if it was taken out of of the machine that the machine "would PUMP soft material, sand, quicksand and any soft mud." That for the purpose of pumping such soft material *that revolving cutter would not be of any benefit.* Page 580, Vol. I.

So far as the rotary pump and the suction-pipe through which the material was drawn to the pump and also the discharge-pipe reaching forward from the pump through which the pump forced the material forward from the pump was concerned, there was no difference, except in the construction, between the Bowers and Von Schmidt machines. Both had these three old mechanical elements, and both used them *as the fundamental mechanical basis of their* machines. The improvements of the dredgers consisted in the modifications of construction, the application of the rotary excavators at the ends of the suction-pipes and the extension of the discharging pipes over the water and land to any desired distance. That Mr. Bowers understood these old sand pumps perfectly well is shown by his own testimony in reference to the first Von Schmidt machine, which had been in successful use and had built many miles of levee before the Davis machine (which was the first of the Bowers machines) was built.

On page 2230, Vol. IV, Mr. Bowers testifies that long before he made any dredger work, they had made the Von Schmidt machine, without the excavator in it, work as a sand pump.

He says on the same page, in reference to this Von Schmidt machine, "they made a sand pump work, *as others had made "sand pumps work long before him.*"

Again, at the bottom of the page, he says of this Von Schmidt machine:

"I know that by removing the excavator, which was found "to be an impediment, *that it operated as a sand pump*, and "handled perhaps as much material as any sand pump had "previously handled in the same length of time."

That these machines were modifications of the old well known sand pumps is also shown by the testimony of Von Schmidt. On page 848, Vol. II, H. B. Angell says that a cutter like Exhibit 2 (the cutter of the Bowers patent) would not be practical except in sand or very soft mud, and that with a pipe attached to a suction-pipe it would be no good, that a cutter is of very little account in that kind of material.

Also in reference to his own machine, Von Schmidt says the same thing, substantially.

Beginning on page 661, Vol. I, he says that his first machine was *worked as a sand pump* by "punching," but they could not swing with it. They could only dredge straight down with it. They lost the cutter and had to work it that way. Again, on page 1721, Vol. III, testifying to the same machine and matter, he says that they used the Williams machine (Von Schmidt's first machine) without a cutter and simply *as a sand pump*. That they did not work it with a double feed, as he does, so that it would run around, but they would run a hole right down, and they would lift it up and move around and run down another hole, "and in that way it worked as a sand pump."

Mr. Lynch also testifies that they used the first Von Schmidt dredger some five or six years, and they used sometimes to break the cutter by striking logs or things in the river, and then they used the machine without the cutter some of the time. They used the cutter more or less all the time that they used the machine. When the material was soft it did not make much difference whether the cutter was on or not, *but about half the time the material was hard enough to require the cutter, and then they used it.* They built four or five miles of the levee *with the cutter in it.* The levee was forty feet wide at the base and eight feet wide at the top, and twenty or thirty feet high, page 2319, Vol. IV. When they got into material where it was hard they had to have the cutter. The bottom of the blades were the cutters. They cut downwards, and the material passed up through the cutters into the suction-pipe, page 2320. From the top to the bottom of the dredging the cutter could and did cut down

twenty-one feet. In hard material it cut slower and in softer material faster, pages 2321 and 2322. The shaft was not strong enough, and twisted or broke, and once in awhile they would break an arm off the cutter, and then they would put on a new one, page 2322. They built several miles of levee on middle river, and some large mounds, one of two and a half acres, on which there was a house and garden, and another large mound for stock to get on in case of floods. The land was regular swamp land, and the mounds were about fifteen feet high, page 2318.

There were some four or five acres of the mounds, all told, 2318. About half the time they did not have the cutter in the machine, page 2319–2320.

Mr. Lynch was on the stand more than once as a witness. On page 684, Vol. I, he states that the whole amount of levee built by the dredger was some seven or eight miles or more. This of course includes the levee that was built by the machine during the time that it was used without a cutter as well as the time that it was used with a cutter.

On page 711, Vol. II, he testified that without the cutter on the machine it worked well *simply as a sand pump, or mud pump*, without the cutter on it.

In the machines of Von Schmidt there were three sections to the suction-pipes, besides the discharge portion of the pipe that reached forward from the rotary pump and through which the material was *forced* and not sucked. In the patent, Ex. 3, the rotary suction-pump is marked C. The first section of the suction-pipe going backwards from the pump is marked D in the patent, and this part is fixed in a stationary position on the boat. This stationary section D of the suction-pipe is curved upwards to a perpendicular direction where it connects with a swiveling joint to the second section of the suction-pipe, which second section is marked E in the patent. The swiveling joint is at F, in the patent. See figure 1. The section E of the suction-pipe curves from a vertical direction to a horizontal, and reaches forward to the universal joint H, near the end of the boat. At the universal joint H, the third section of the suction-pipe (which is marked I in the patent), is joined to the second section E. This third section I reaches forward over the end of the boat and then turns downward in a perpendicular direction. In operation, the two forward sections of the suction-pipe are moved, or swiveled around in a horizontal semicircle, the joint F *serving both as the center and pivot* around which the two sections E and I rotate. Th vertical part of this suction-pipe works in, and never changes from, a

vertical position. It has no vertical swing whatever. Said vertical part has telescoping sections which are used for raising or lowering the bottom of the suction-pipe.

A semicircular platform M is provided, to which two arms, L L, are attached with pulleys, or sheaves, in their ends around which chains R R pass and their lower ends connect with the hood at the lower end of the suction-pipe, and the other ends of the chains connect with winches, *s s*. These chains assist in moving the excavator, hood and suction-pipe around to their work. The platform M is movable and when it moves all the said parts, the suction-pipe, the said chains R R, the arms L L, and winches *s s*, hood and excavator move with it.

The semicircular movable platform M rests upon small rollers *o o*, and is moved from side to side by a small pinion cog-wheel *p*, which works in a horizontal semicircular rack *x*.

Upon the lower end of the suction-pipe is the hood *n' n'*, and underneath this hood and extending below it is the rotary excavator K. The hood extends farther from the section-pipe on one side than it does on the other side, so that the end of the suction-pipe is at one side of the center of the hood. The end of the suction-pipe and hood and excavator K is shown in figure 4 of the patent.

The rotary excavator K is revolved by means of the vertical shaft Q. This shaft Q passes down at one side of the suction-pipe and goes through the center of the hood to the exact center of the excavator K. Other minor devices are described in the patent, and were used in the defendant's machines, which it is not necessary to specifically describe.

The cutter K at the lower end of the suction-pipe is carried on the lower end of the vertical shaft Q and always revolves in a horizontal direction at right angles to the vertical shaft. The cutter is large, being seven or eight feet in diameter. It merely loosens up the material but does not otherwise move it, and it does not carry the material to the suction-pipe or anywhere else. The material is drawn from the bottom of the water way by suction alone. There is nothing in Von Schmidt's cutters that performs the office of carrying the material and depositing it in the suction-pipe as do the radial bottomless buckets of the Bowers patent.

The patented dredger of Mr. Bowers has practically the same dredger boat, suction-pipe, rotary pump and discharge pipe that the old sand pump had. His suction-pipe differs from Von Schmidt's in that its upper end is pivoted and it swings vertically to raise or lower the cutter wheel. His cutter wheel that is described in his original specifications consists of a

rotary excavator wheel having radiating bottomless buckets. This wheel revolved around an inner cylinder which was actually the lower end of the suction-pipe. These specifications say, record, page 302:

"The inner cylinder D is cut away at G (Figs. 5 and 8), "where the wheel surrounds it, *only so as to make an opening* "*about equal in area to that of a cross-section of the feed pipes in* "*order to bring the full power of the pump,* or other discharging "apparatus, *to bear upon the contents of each bucket, as it passes* "*the opening* G, so as, in connection *with the forcing power of* "*the bucket,* to secure a full and clean delivery."

There is no other kind of cutter described in those original specifications other than one with the inner cylinder with an opening in it *only equal to the area of the cross-section of the feed pipes.* By feed pipe is meant the suction-pipe.

The inner cylinder cut away at G is shown in Figures 5 and 8 of the said original drawings.

None of Von Schmidt's cutters ever had any inner cylinder or any equivalent of it in any way or shape. His cutters would not by their shape or otherwise force the spoils into any suction-pipe or into any cylinder. In Von Schmidt's cutters the spoils were lifted from the bottom by the suction of the suction-pipe alone.

Those original specifications of Mr. Bowers also describe as the pivot upon which the dredger swings a small turn-table L, used in connection with two spuds as vertical anchors. When the dredger was swinging and doing its work both of the spuds were anchored in the bottom and held the turn-table rigid and the dredger swung around it as a pivot. When the dredger was to be moved ahead the back spud was raised and the turn-table revolved one-half of a revolution upon the forward spud. This half revolution brought what was the back spud forward where it was dropped down and anchored, the two spuds again holding the turn-table rigid. This was the mode, *and the only mode of using the spuds and the turn-table.* There was no use of the spuds shown or described in the said original specifications except in connection with the turn-table as above set forth.

At one place—top of page 309 of the record—they speak of using an anchor or pivot in the rear of the dredger. This was to get a very long sweep of the machine for cutting wide channels, but even there no spud is mentioned.

On page 1130 of the record Bowers himself testifies that in his original specifications he did not say any thing about moving the machine forward by the use of alternate spuds except in connection with the turn-table.

Von Schmidt's machine did not usually swing when at work, but the frame that carried the suction-pipe swung around the bow of the boat, while the boat remained stationary. When he fastened the frame rigid to the boat and swung the boat, as he sometimes did to get a long sweep for the suction-pipe, the boat swung around a single spud just as clam-shell dredgers and all other water craft had been doing for ages.

Mr. Bowers did not invent or discover the use of the spuds as vertical anchors for swinging boats or dredgers around them. He states himself that they were used in the clam-shell dredgers which swung on them. Some of the spuds went through the clam-shell dredgers that were in use long prior to his invention, and they were then and in those cases just as much vertical anchors as they were in his case. Record, Vol. I, pages 291 to 294.

Buswell testifies to the use of the spuds in the first Von Schmidt machine, and that they were an old and common device in use for thirty years, pages 889 *et seq.*, Vol. II.

Also the spuds were used in the Ball chain dredger that was operated in San Francisco bay in 1873, and described in the *Mining and Scientific Press* of December 13, 1873. A description of this "Ball Sweeping Dredger" was published in the *Mining and Scientific Press* of December 13, 1873, three years, lacking only four days, before Bowers filed his application for a patent. This published description is in evidence as Exhibit 12. (Record, Vol. IV, page 2429.) It describes the swinging, or "sweeping" on a spud at the end of a triangle, but the last three lines states that as used the machine had the spud attached in the bow of the barge. The barge was the hull of the dredger.

This public use and printed description of the use of the spud as a vertical anchor more than two years before the application for a patent therefor made it public property, even though Mr. Bowers had been the first and original inventor of it before that date.

Andrews vs. *Hovey*, 123 U. S., 267.
Walker on Patents, latter part Section 102.

This swinging apparatus of Ball's, which was in the machine of 1873, was practically the same as that shown in Bowers' patent, and Mr. Bowers *saw it on the machine.* It had the vertical spud, the two side anchors, and the lines, with apparatus for using them. See Bowers' testimony, Vol. II, on pages 1140, 1141, 1128 to 1134; also pages 1182, 1183, and 1184.

We have been pointing out these facts in the case the better

to show the fatal effects and importance of the new matters that were put into the specifications, and which consisted of a different rotary cutter from any shown in the original specication, and also of a new and different method of moving the machine forward by the use of two alternate spuds without the turn-table.

More than two years after Williams & Bixler had been using the first Von Schmidt dredger by making the swinging frame rigid with the boat and swinging and walking the machine forward by the use of two alternate spuds, Mr. Bowers amended the specifications of his renewed application by putting into them *for the first time* the following, viz.:

"A less perfect forward feed is secured by placing the "dredger so that the excavator is at the side, and the turn-"table in line with the longitudinal axis of the proposed exca-"vation. The turn-table is then rotated until the vertical "anchors are in a line parallel with the transverse action of "the dredger, where it is made stationary. This leaves one "anchor diagonally in advance of the other, the dredger lying "diagonally across one half of the line of the proposed excava-"tion. The forward anchor is now dropped into the mud to "form a pivot, upon which the dredger swings as it cuts to the "opposite side. The dredger then lies diagonally across the "other half of the line of the proposed excavation, the swing "having brought the rear anchor to the front. This anchor "in its turn is dropped to form a new pivot, and the other is "then raised. The dredger swings first upon one and then "upon the other anchor, these anchors being alternately "raised and lowered for this purpose. As this mode of feed-"ing by swinging alternately upon two different pivots gives a "wedge-shaped cut, requiring two full swings to make one full "cut, it is equivalent to a loss of one-half of the time, and is "used only to prevent stoppage of the work when the apparatus "for rotating the turn-table is stopped for repairs or other cause, "in which case it becomes valuable." See first column of page 5 of the specifications of the patent.

The other new matter put into the specifications was the following, which is in the first column of page four of the specications, viz.:

"The office, in part, of this chamber or shield is to prevent "too large a percentage of water from entering with the mud; "but when the spoils are of a character to require a large per-"centage of water to carry them up the suction-pipe, as may "sometimes be the case, *the chamber may be cut away until only "enough remains to support the excavator and shaft R.*"

This was put in after Bowers had tested his inner cylinder and found that it spoiled his whole machine, and after he had learned of Angell's rotary excavator without any inner cylinder and its success, and long after he had personal knowledge of the success of Von Schmidt's machines and rotary excavators that had no inner cylinders. The object of it was doubtless to get away from his own supposed invention, which had proved a failure, and to get on to the inventions of others which had proved successful. Whether such was Mr. Bowers intentions or not *it certainly has been the actual result*, as the Courts have decided that the patent specifications as so changed covered two different excavators, one of which had the inner cylinder cut away, and it is *through this that the infringement has been worked out by the Courts*.

The opinion of the Circuit Court is in the record, from page 116 to page 135.

Beginning near the bottom of page 119 the Court states *that the portion about the use of the spuds without the turn-table was not in the original specifications*, but states that Bowers did not copy from Angell or from defendant, because that he had shown a drawing made by him in July, 1864, in which two spuds were shown as self-contained pivots.

As to the excavators the opinion says, on page 125, after quoting from the patent, that *it describes two forms of excavator*, one containing an inner cylinder with an opening on top, the sides of the chamber making bottoms to the buckets in their revolutions except when over the opening in the chamber, and the *other form, the same as the first, except with the inner chamber cut away until only enough remains to support the excavator and its shaft*, and remarks that: "Both have an inward delivery." The opinion goes on and after stating that the defendants claim that Bowers should be confined to an excavator with the inner cylinder because that was his original invention, and that he took the idea of the excavator without the inner cylinder from the later Angell dredger, states that *it is true that he amended his specifications*, &c., but further says that he, Bowers, *had conceived* of an excavator with inward delivery without an inner cylinder as shown by his model made in 1868, and then adds:

"*It was certainly competent for the Patent Office to permit him* "*to amend his specification so as to embrace his invention*, and it "has been held that this may be done even though the change "be made in reference to another patent applied for and issued "after his invention. 7 C. C. App., 164." Page 126.

The citation was not of a parallel case. Neither that reference, nor any other authority that we can find, justifies this

decision *to the effect that after a renewal under said section 4897 new inventions may be put into the specifications for which no patent had been ordered to issue upon the payment of the final fee, or at all, and which were not described or claimed or in any manner shown in the original application or in any amendments made thereto prior to the application to renew.*

One decision of the Patent Office we have found that is applicable, and that is the case of *Thompson* vs. *Waterhouse*, 30 Official Gazette, 177. The opinion of the commissioner in this reference is a very able one.

The decision of the Circuit Court being affirmed by the Court of Appeals, it follows that the two Courts have decided that new inventions may be lawfully put into the specifications after the renewal application is made under said section 4897. *This is a vital point in the case*, as most of the infringements adjudged are based solely on the interpretations which the new matters enabled the Courts to give to the claims. We submit that the Commissioner of Patents did not have power or jurisdiction to allow new inventions to be put into the case for the first time after the renewal application was made, and that the said Courts erred in deciding that he had.

Drawings and Models of 1864 and 1868.

These drawings and models are the drawings D, D, and the models Exhibits M[2] and N, and I, I. These drawings are in the book of exhibits at pages 10 and 11.

The first effort at invention on the part of Mr. Bowers is shown in Exhibits D D and E E, the drawings which he says were made July 13th and July 14, 1864. In these drawings he shows one of those large rotary wheels with buckets upon its periphery, which were intended to raise the mud and deposit and dump it into a hopper. He proposed to *draw and drive* it from the hopper by means of the rotary suction-pump drawing on one side, and by ejecting a stream of water into the other side that would drive and assist the suction. In that drawing he placed two spuds at the back end *and outside* of the boat. It would seem he did this with the idea of walking it forward on these spuds.

This drawing D D is claimed by the complainant to contain the foundation and substance of his invention.

Exhibit E E, Mr. Bowers says, he made July 14, 1864. Exhibit D D, he says, had been made the day previous, and objections being made to the bottomless buckets shown in that exhibit, he made the drawing E E, in which, as his memorandum

thereon shows, he proposed to put bottoms to the buckets and have them hinged, so that they would automatically open and dump their contents into a hopper which rises from the stationary central shaft of the wheel. These hinged bottoms were to act automatically in opening and closing.

One feature of these drawings is that the hopper must be fastened to something stationary that did not revolve, and yet it must be placed *inside* of the wheel. This seems to be effected in Exhibit E E, by making the shaft hollow and stationary.

The memorandum on this drawing says:

" Objections being made to the bottomless buckets, shown in " my sketch made yesterday, July 13, 1864, I here show how " the *inward delivery* may be retained with hinged bottoms " automatically opening and closing, the mud being dumped " into a stationary receiver (between the spokes of the wheel) " emptying through a slot in a large hollow axle, into one end of " which a stream of water may be injected for carrying away " the mud without passing it through the pump, the receiver, " A, being high enough above the pipe or stationary hollow " axle to serve as a pressure column to prevent egress of water " through the receiver and to force the mud into the hollow " axle, to the other end of which a discharge-pipe or hose is " flexibly connected. If it is desired to carry mud further than " it can be carried in this way, a relay centrifugal pump may " be connected with the discharge-pipe for renewed propulsion, " as this pump having no valves will allow the passage of mud " and water. This wheel has two hubs and two sets of spokes, " but the same principles may apply to a wheel with a single " hub as in yesterday's sketch with bottomless buckets.

" I believe the principles involved in these sketches are " valuable, and I shall work them out and apply for patents as " soon as circumstances will permit.

" I wish I could do so at once, but as this is impossible, I " retain this sketch to prevent me from forgetting the details. " (Signed) A. B. Bowers."

The foregoing shows two hubs and two sets of arms, and the bucket going across the face of the wheel from one set of arms to the other, shows that the hopper must be sustained entirely on the hollow axle. The hollow axle itself being used as the pipe from which the material is withdrawn.

Now it is apparent that if the pipe discharges from the bottom of the hopper, as shown in the second figure D D, there could only be one hub and one set of arms for carrying the buckets and doing their dredging, because if there were two sets of arms the connecting supports that would hold the hop-

per in its position could not be passed by the arms of the wheel and it could not revolve. This is what the foregoing memorandum refers to where it speaks of the first wheel-having but one hub.

On the first drawing (Exhibit D D) the memorandnm says:

"San Francisco, July 13th, A. D. 1864. Studied this out "after I went to bed last night. A Rotary Excavator. The "buckets have no bottoms, but revolve around a stationary "water-tight drum, having an opening into an interior hopper "or mud-receiver. This hopper is curved to form a half-circle "at the bottom from which a short pipe leads out through the "side of the hollow stationary drum, and from this pipe a "large, strong suction-hose passes around the bow of the boat "and is secured to the suction-pipe of a centrifugal pump. "These pumps have no valve and coarse substances can pass "through them. I believe they will carry a heavy percentage "of mud and sand, because they take up tan-bark without diffi- "culty. An injection-pipe may send a strong jet through the "bottom of the hopper, to cut it up if necessary. The bucket "wheel and interior drum rises in a sliding frame between "upright guides. I am of the opinion that the suction pump "alone will do the work, because a large amount of water will "come up with the mud. And as the hopper is deep I think "the weight of mud and water would force the water into the "stream from the force pump, and this alone would also handle "a large amount of mud. The dredger swings on a vertical "anchor, or on two, first on one and then on the other. But "this makes a wedge-shaped cut, requiring two full swings to "make one full cut. I think I can find some way to get around "this. I have shown this sketch to several persons whom I "thought would think well of it; but they seem to have no "faith in it. Some think the pumps will not handle the mud. "Some think the friction of the mud on the inner drum will "prevent success. The last can be obviated by doing away "with the inner drum and using hinged falling bottoms, "arranged to open and shut automatically. I have the utmost "faith in the combination of elements here shown and as soon "as I can will do my utmost to perfect, patent and profit from "it. I can make a ditching machine on this *principle of in-* "*ward delivery* to an endless carrier. Perhaps an outward "delivery will do for a ditcher. I may be able to make enough "from ditcher to enable me to retain patent for dredger. Will "try it as soon as I can. In meantime will lay this carefully "away. I can do nothing with it now, but I will some day. "Preserve carefully."

Written in the lower sketch of D D is the following:

"It is the best thing I ever struck, and I have made this "sketch to prevent me from forgetting it while I am obliged "to attend to other matters. A. B. Bowers."

And written below the sketch is the following:

"Made pencil sketch of bottoms hinged to open and close "automatically to-day, July 14, 1864, with stationary hopper "and screen between the two hubs and two sets of spokes. "*The hopper forms a pressure column* as in this case, but emp- "ties into stationary hollow axle, around which the wheel re- "volves. A. B. Bowers."

Although the complainant has endeavored to make so much of these drawing, and has asserted that they show a complete invention, still it is a fact that *they are not shown in his patents. Neither one of these wheels, or of these hoppers, or the injection-pipe, or the suction-hose even, are shown in the plaintiff's patent drawings;* and *neither are they described in his specifications or mentioned in his claims.*

The rotary wheel E of the patent is of small size, only some two or three feet in diameter, being but little more than twice the diameter of the suction-pipe. The end of the suction-pipe is made its inner cylinder. On Exhibits D, D, and E, E, however, the diameter of the wheel is more than ten times the diameter of the suction-pipe. The wheel E of the patent *has no hopper between the buckets and the suction-pipe* or anywhere else, and as constructed no such hopper could be placed in it. The wheels D, D, and E, E, however, *both have such hoppers, and are so constructed that they could not be operated without such hoppers.* That hopper in D, D, and E, E, *is a necessary mechanical element* of the apparatus there shown. If the hopper was taken out of either of those wheels the buckets would have nothing to empty into, except open space, as the suction-hose there shown would not receive any spoils that were brought up by the wheels. Those wheels may have an inner rim, but that rim is too narrow to be fairly called a "cylinder." The length crosswise of that rim is only about one-fifth of its diameter, while in the excavator of the patent the diameter of the inner cylinder is very much less than its length. *The bucket-wheels of* D, D, *and* E, E, *are not mentioned or described in the patent at all.* Certainly nothing like them can be found mentioned or described or hinted at in the original application. How then can the drawings D, D, and E, E, carry the invention back of the date of filing the original application? No matter what a man invents, his patent only covers what its claims cover, and its claim must cover, unless the commissioner exceeds his jurisdic-

tion in granting the patent, what is described and *only what is described* in the specifications that are filed.

The cutter wheels and hopper of Exhibits D, D, and E, E, are not in that original application and the apparatus shown in said Exhibits D, D, and E, E, *so far as the rotary excavator* is concerned, is not contained in the said application filed December 9, 1876.

Neither are the models M^2, N, or I, I, like what is shown in the patents sued on. Model M^2 is much like the drawing D, D, and E, E. It has the buckets on the outside of a comparatively large wheel, and they lift and carry the spoils to the top and then *drop them into a hopper device without any assistance from suction at all*. The model N operates with a parallel motion that makes the cutter remain in a vertical position and cut with its bottom knives only. The model I, I, is also different from what is shown in the patent.

Besides all of this, the rule of law does not permit an inventor to allow his invention to lie idle for so many long years without either applying for a patent or reducing his invention to practice, and then, after another independent inventor has made a similar invention, come in and assert an anticipation and obtain a patent that shall cover the invention of the later inventor who first reduced to practice.

It has been repeatedly decided that a conception of an invention, even when reduced to drawings or shown in models, does not constitute an invention.

Kendall vs. *Winsor*, 21 Howard, pages 327 and 328.
Whitely vs. *Swayne*, 7 Wallace, page 685.
Walker on Patents, §58 to §62.
Northwestern Fire Extinguisher Co. vs. *Philadelphia Fire Extinguisher Co.*, 1 Banning & Arden, pp. 185 and 186.
Corn Planter Patent, 23 Wallace, pages 210 and 211.
Stilwell, etc. vs. *Cincinnati, etc., Coke Co.*, 1 Banning & Arden, page 617, and first half page 621.
Stainthrop vs. *Humiston*, 4 Fisher's Patent Cases, 113.
Johnson vs. *McCullough*, *Ibid*, 170.
Cahoon vs. *Ring*, 1 Fisher's Patent Cases, 397, first half of page 408.
1 Robinson on Patents, §126 and authorities cited thereunder.
Also *Ibid*, §318 and authorities cited under note 2 thereunder.
Reeves vs. *Keystone Bridge Co.*, 5 Fish. Pat. Cases 456, pages 462 and 463, and authorities there cited and discussed.

Pennsylvania Diamond Drill Co. vs. *Simpson*, 29 Fed. Rep., 288 pages 290 and 291.

In this last case the Court says: "It would indeed *be a strange* "*perversion of the purpose of the Patent Laws if one who had* "*conceived of a new device, and proceeded so far as to embody it* "*it in rough sketches, or even in finished drawings, could there* "*stop, and yet hold that field of invention against all comers for* "*a period of 17 years.*"

Detroit Lubricator Man. Co. vs. *Renchard*, 9 Fed. Rep., 293, page 297.
Odell vs. *Stout*, 22 Fed. Rep., 159, pages 164 and 165.
Kneeland vs. *Sheriff*, 5 Banning & Arden, 482.
Draper vs. *Potemska Mills*, 3 Banning & Arden, 214.
Ellithorp vs. *Robertson*, 2 Fish. Pat. Cases, 83, pages 85 and 86.

Under the foregoing authorities even an older application for a patent which was rejected, but which contained a full description of the invention, would not anticipate a subsequent patent granted to another inventor for the same thing.

In *Bedford* vs. *Hunt*, 1 Robb, on page 150, Judge Story said: "The first inventor, *who has put the invention in practice, and* "*he, only,* is entitled to a patent."

And again, on page 151, in the same decision, the Court says:

"The intent of the statute was to guard against defeating "patents by the setting up of a prior invention, *which had* "*never been reduced to practice.* If it were the mere speculation "of a philosopher or a mechanician, which had never been "tried by the test of experience, and never put into actual "operation by him, the law would not deprive a subsequent "inventor, who had employed his labor and his talents in "putting it into practice, of the reward due to his ingenuity "and enterprise."

In *Agawam Co.* vs. *Jordan*, 7 Wallace, 583, on page 602, the Supreme Court says:

"The settled rule of law is, that whoever first perfects a ma- "chine is entitled to the patent, and is the real inventor, al- "though others may have previously had the idea and made "some experiments towards putting it into practice. He is the "inventor, and is entitled to the patent, who first brought the "machine to perfection and made it capable of useful opera- "tion."

In *Whiteley* vs. *Swayne*, 7 Wallace, 685, the Court says, on page 687:

"He is the first inventor and entitled to the patent, who, "being an original discoverer, has first perfected and adapted "the invention to actual use."

Now, the most that Mr. Bowers has claimed to have accomplished prior to the filing of the application for his patent was the making of drawings and models. Not only was this all, but the drawings and models which he made *were not drawings and models of what is described in his patent.*

Infringement.

Probably no case was ever before presented in which it was an admitted fact that there was nothing in the defendant's machine that the patentee had invented, and yet the defendant's machine was held to be an infringement of the patent which was a machine patent only.

The defendant's machines are made under his own patents. *It is conceded by the complainant and proved by the testimony of Mr. Bowers himself that the machine which the defendant built in 1876 does not constitute any infringement of the complainant's patents, nor would any machine that was built according to the defendant's said first patent, Exhibit 3.*

On pages 499 and 500 of the Record Mr. Bowers testified as follows:

Q. 3. (By Mr. WHEATON). If none of those claims were changed to include anything that you saw in the Von Schmidt dredger, why is it that you have brought suit against Von Schmidt for the use of that identical dredger which you had seen and examined before those claims were drafted?

A. Because my broad claims, made without any reference to Von Schmidt's machine or his devices, made those devices infringements of my claims.

Q. 4. Did not those claims cover the devices in the Von Schmidt dredger, as you understand them?

A. As I understand it, I have no right to use the precise devices shown in Von Schmidt's patents.

Q. 5. Why not?

A. *Because I did not invent them, and because Von Schmidt did, and has a patent for them.*

Q. 6. The question is now whether, as you understand your patents, they cover the devices contained in Von Schmidt's dredger or not?

A. I don't understand them to cover those devices used by

Von Schmidt *so as to give me the right to use them.* I do understand them to cover them in such a way as to take from Von Schmidt the right to use them."

Exhibit I was a model of the rotary excavator shown in Von Schmidt's first patent. Record, 179. On pages 193 and 194 Mr. Bowers says that he would not consider that the cutter portion of Von Schmidt's dredger would infringe his patents if the plows and head containing them were taken out and this original device represented by Exhibit I put in place of them.

On page 197 he repeats that the device represented by Exhibit I is not an infringement of his patent. See, also, Record, pages 2236 to 2240.

There is much other testimony to the same effect.

Commencing near the bottom of page 892 and going on to page 895 Mr. Bowers states that he knew all about the first Von Schmidt dredger that was built in 1876; that he saw it while it was being built; that he "watched the construction of it very carefully" that he tried to have Von Schmidt change the plan of it, but could not get him to do it; that he "was exceedingly anxious to have Von Schmidt change the design of his pump because he," Bowers, "thought it would be a failure." He also says that there was nothing about the Von Schmidt machine of 1882 and 1883 that he did not know all about. This was Von Schmidt's second machine.

The differences between the first Von Schmidt machine and the second one, consists *entirely* of the differences in the construction and cutters of the excavator. Mr. Bowers also claims that the first machine did not have the swinging spuds or the extended flexible discharge-pipe floating on the pontoons, but we have shown that it did have both of these sets of devices.

On pages 2251 and 2252, Mr. Bowers tells of the new cutters which Von Schmidt put into the second machine when he first built it. Although he goes a great ways around to tell it, he finally describes them as the ring and plows of Von Schmidt's second patent. On page 2252 he is asked who planned those cutters, and he says that *Von Schmidt planned them, and that he certainly knows that he, Bowers, did not plan them.* On page 2253 he states that if those cutters were an invention at all that *they were Von Schmidt's invention, and not his.*

On page 2269, after describing the new Von Schmidt excavator, he testifies that *de did not devise the details of its construction, and Von Schmidt did devise them.*

On page 2236, the first claim of Von Schmidt's patent of 1884, which covers the second machine, was read to Mr. Bowers, and he testifies that the combination (the claim is for a combination

only) covered by the claim *was never devised by him*, and he did not understand that *his patent covered that combination, and that he had no right to object to Von Schmidt having a patent for it.* That he, *Bowers, did not claim anything which Von Schmidt claims there to be any infringement of his patents.*

On page 2237, Mr. Bowers testifies to nearly the same thing in regard to the third claim of Von Schmidt's said patent of 1884, and says that *because he did not claim it there was no interference declared* between himself and Von Schmidt in the Patent Office.

On page 2238 the second claim of the said Von Schmidt patent was read to the witness and he says that claim *does show a combination which makes up* a cutter that has an inward delivery.

On pages 2235–2236 Mr. Bowers distinctly states that *he cannot show anything in his patent that describes any cutter which is shaped like those plows* of Von Schmidt's. He there says that *if he had described anything of that sort an interference would have been declared* in the Patent Office between him and Von Schmidt.

On page 2239 and 2240 he admits that Von Schmidt's devices are *not an improvement made upon the Bowers machine.* On page 2245 he says that it is irrelevant matter as to whether he or Von Schmidt made their inventions first.

But on these pages Mr. Bowers asserts that *because he has made a broad claim for a cutter with inward delivery that the claims cover the Von Schmidt machine, notwithstanding that none of the devices or combinations of devices or arrangement of devices or construction of mechanism that is to be found in the Von Schmidt machine was ever invented by himself, and that none of the Von Schmidt apparatus is described in the Bowers patent.*

The record contains a very large amount of the testimony of Mr. Bowers, showing that he is using his broad claims to cover generally what he never invented or described in his patent; and it is the *action* of "inward delivery" *and not mechanism* which is included in the claims and which is used to expand them with.

Plows and knives attached thereto was not an improvement upon, or addition to, or a change in any form of Mr. Bowers' apparatus, but was an improvement *upon Von Schmidt's own apparatus, which apparatus, before it was so improved, was not any infringement.* This is not disputed, but is admitted.

We submit that under such circumstances the Court of Appeals erred in so construing the patentee's claims as to make them cover the Von Schmidt cutters, and we urge that "inward delivery" *is an effect only and that it is not mechanism.*

We also urge that the vertical spud used with its lower end in the ground was not a center of oscillation that was "self-contained" by the dredger. The turn-table was carried by the boat and was literally self-contained by the boat. But the vertical anchors, the spuds, were not carried by the boat, nor were they "self-contained" by the dredger in any literal or sensible meaning of the term. When in use they, the spuds, were driven in the ground; they were supported by the ground and not by the dredger, and all of those portions of them that were below the boat in the water and in the ground were outside of the dredger altogether.

Aggregations.

The Court of Appeals in its decision says that the combinations of the complainant's claims cannot be said to be mere aggregations, "for the reason that the result is the product of "the combination, each element affecting the action of the "others and all of them co-operating in the one result of sev-"ering by the forward and side action of the machine the ma-"terial in place where it is not wanted and depositing it in an-"other place where it is wanted." And further: "No combi-"nation of elements that so operate can be regarded as a mere "aggregation, for each one has a direct influence upon the ac-"tion of each of the others, the result necessarily being the "product of the combination itself and not a mere aggregate "of several results, each the complete product of one of the "combined elements." The court cites the cases of *Hailes* vs. *Van Wormer*, 20 Wallace, 352; *Royer* vs. *Roth*, 132 U. S., 201; *Reckendorfer* vs. *Faber*, 92 U. S., 347; and *Beecher Manufacturing Co.* vs. *Atwater Manufacturing Co.*, 114 U. S., 524; pages 46 and 47 of the petition filed herewith.

While the above cases define what is *not* a patentable combination, none of them hold or tend to decide that a patentable combination exists merely because each one of the assembled parts has a direct influence upon each of the others and co-operates in producing a result that all of the assembled parts assist in producing, and we do not see how any of the cases cited tend to justify the decision of the court. While those cases define what is *not* a patentable combination, they do not decide what is a patentable combination any further than they state the general features thereof; and in the case in 92 U. S., on page 357, the court furnishes examples of what constitutes the joint action necessary to create a patentable combination. But in none of the cases cited is it held that a patentable combination is created because the ultimate general result reached is the

product of the combination, even when there is added to this the further facts that each one of the elements affects the action of the others and that all co-operate in producing the full general result. Nor do we think that these facts furnish any tests whatever for determining what does, or does not, make a patentable combination.

One instance of the very strongest character to show what is not a patentable combination is the case above cited by the court, of *Royer* vs. *Roth*. In that case the claim was for the combination with the drum of a rawhide fulling machine, operating to twist the leather alternately in one direction and then in the other, a shifting device for the purpose of making the operation automatic and continuous. The claim is on page 203, 132 U. S.

Now, here was a claim for a combination of two mechanical elements. One was the leather twisting machine and the other was the reverser that was applied to it. In this combination the machine operated the reverser, and the reverser operated the machine so far as giving to it the necessary alternate action of running first in one direction and then in the other direction went. The machine would not reverse without the reverser, and neither would the reverser operate to reverse the machine except as the machine itself operated upon the reverser. Yet the machine must reverse or it never would make any leather or do any practical work of any kind. Here, then, in the very case cited by the Court as an authority, is a combination adjudged to be only an unpatentable aggregation, although each of the elements of the combination not only affected *but actually controlled* the action of the other, and in which both elements co-operated in producing the result of manufacturing that particular kind of leather. Yet the Supreme Court decided that as the reverser did only its *its own work*, which was that of reversing the machine, and the machine did *its own work*, which was that of alternately twisting the leather first in one direction and then in the other, that there was not a joint action between them, but only the action of each added to the other, and that it was not a patentable combination.

One of the other cases cited by the Court well illustrates the difference between the action of the mechanical elements in co-operating to produce the ultimate result of the entire apparatus, whatever it may be, and the necessary co-operation of those elements in producing *one of the same individual results*. It is no test at all of a patentable combination that each mechanical element co-operates and assists in producing

the general result. Twenty men may each carry an hundred pounds of coal to the place where it is wanted. In such case each does his own work only, yet they all co-operate in placing the entire ton of coal where it is wanted. But if they are to carry the whole ton in one body, then they must all lift together and each and every man carries an undivided part of the weight of each and every particle of the entire ton of coal, and their action is joint. If, however, a man carries any load a part of the required distance and delivers to another man who carries it another part of the required distance, and there delivers it to another man, who receives it from the second man and carries it the remainder of the distance, they all co-operate in producing the ultimate result of taking the load from the place where it is not wanted and by continuous action depositing in a place where it is wanted, and the action of each man affects the action of the other, because each either delivers or receives the load from another, and if either man failed in doing his part the load would never be taken from the place where it was not wanted and deposited in a place where it was wanted. Yet there would be no joint action in the operation, and the final result would be reached by adding the separate action of each man to the separate actions of the other two men.

Now, in the above cited case of *Beecher Manufacturing Co.* vs. *Atwater Manufacturing Company*, 114 U. S., 523, a combination was claimed for certain combinations of dies used to form the clip arms of king-bolts for wagons. Also, for a series of dies for the same purpose. The Court says:

"The two pair of dies were not combined in one machine, and did not co-operate to one result." Yet the two pair of dies, although used separately, *did co-operate to produce the ultimate general result of shaping the said king-bolts.* But while so co-operating in producing the general result there was *no place in which they joined their action in producing one and the same individual result.*

So in the case at bar, while the spud and the floating discharge-pipe co-operate in producing the general result of taking the spoils from a place where they are not wanted, and placing them in another and distant place, where they are wanted, and so also does the rotary excavator, yet still there is no place in which the action of the spud *joins* with the action of the rotary excavator *in producing jointly one and the same individual result.* The spud holds the dredge in its position, and it does this entirely alone and without the assistance of the rotary excavator at all. The spud does nothing except to hold the dredge in its

place, and *there is no other mechanical device that joins or in any way assists the spud in the performance of this work.* It is a mistake to say that any other one of the elements affects the action of the spud, for it does not.

In *Burt* vs. *Evory,* 133 U. S., 349, the inventor had made a shoe with expansible gore flaps, and he claimed (page 357) a shoe when constructed with expansible gore flaps. The Supreme Court held that the patent was for the entire shoe, but that the shoe as made up was a mere aggregation of old parts. Yet in that shoe every one of the old parts was an absolute necessity, as not one of them could be removed without destroying the shoe. Each part affected every other part, and every part co-operated in making up the general result which was the shoe as a new article.

And so we might go on with many other cases in which the Supreme Court has decided that the combination patented was only an unpatentable aggregation, although each and every element of that aggregation affected the action of every other element and co-operated in producing the general result.

The test as to whether two mechanical elements are a patentable combination or only an aggregation consists of determining whether those two elements *assist each other in doing the same identical part of the work* or not. Is their labor *joint in producing any one single action* or operation? Could the one perform its own individual operation if the other ceased to act? Is their action joint?

The Court will understand that we are applying this test only so far as we claim that the putting of the *spud* into a combination claim makes that claim a claim for an aggregation only, and also that the putting of the *floating discharge-pipe* into a combination claim makes that claim a claim for an aggregation only, and that all of such claims are void, because they cover nothing but aggregations.

The actions of the rotary cutter, suction-pipe and exhaust pump are doubtless joint. They each and all join in bringing the spoils from the bottom into the pump. Their action is not successive, one after the other, but they work jointly. The cutter would not act and do its work unless the suction acted with it and acted *jointly* with it. The suction operation could not be produced without the exhaust pump, and the pump must do its work so as to assist the action of the cutter wheel. Stop one of these devices in tough material and neither of the others could perform their work. It takes the *joint action* of both the cutter and the suction to loosen the material and carry it to and through the pump. At least this is the case with the Von

Schmidt machine, since with his machine the material would be left on the ground unless his suction acted with the cutter. It is also the fact with any of the Bowers dredgers that have accomplished any work. If his plans of having the cutter cut up the materical, and, by its own force, carry and deliver it into the suction-pipe would have worked, it might be doubtful whetcher the addition of such a rotary excavator could be patented as an element in the combination, or whether it would not have to be patented as a device by itself.

But when the material has been carried by the joint action of the suction and cutter to and through the suction-pump *there the action of the rotary cutter and also of the suction stops short off.* The material is forced on through the discharge-pipe *by the pump alone and is not assisted by the cutter or by the suction.* A part of the discharge-pipe is stationary on the boat. The addition of the floating pipe is *but an addition,* and all it does is to transport the material, and this it does *alone and unassisted except in so far as the pump requires more power to force the material further on* through the added floating-pipe than it would require to force it only through that part of the discharge-pipe that is on the boat.

The spud held the dredger boat in place just as it had always held all sorts of water craft in place. So using the spud was but applying an old device to a use that was strictly analogous to its prior uses. In fact it was the exact use to which it had been commonly applied. The action of the spud was all expended in the one single act of holding the dredger boat in place. It performed this duty *alone* and without any assistance whatever from any other device. It did not act jointly with the cutter, nor did the cutter act jointly with the spud. The work of the two devices is nowhere blended into a single action of any kind or nature.

Claim ten of the first patent sued on covers a combination of which both the spud and the rotary excavator are mechanical elements. As there is no joint action between these devices the claim covers only an unpatentable aggregation.

As to the floating extension of the discharge-pipe it is a device by itself. It has no joint action with any other device in the apparatus. Every other device in the entire apparatus does just exactly the same work, and in exactly the same way when the floating discharge-pipe is not added as they do when it is added. The floating discharge-pipe is an *added* device and its work is an *added* effect only, and that added effect begins with, and ends with, the added device. It has no joint action with

any other device. It is made an element in Claims 16–25 of the first patent sued on, and to Claims 17 and 18 of the second patent sued on. These claims we therefore urge are void, because they cover only unpatentable aggregations.

The floating discharge-pipe with flexible connections, and its use, is shown in the English patent to Thomas Burt of March 12th, 1867, Exhibit 19. This is shown in the record, commencing with the last three lines on page 2457 and going to the middle of the next page, 2458.

It is also shown in Exhibit 10, the American patent to Duvall, No. 86,290, issued January 26th, 1869 (over nine years before Mr. Bowers filed his application for a patent). See page 2 of the specifications of this Duvall patent which says:

"If discharging over water for a long distance, and particu-
"larly if the water is agitated, I use pipes with flexible joints,
"supported on pontoons or lighters; and if discharging over
"land, I use pipes or open troughs, supported on movable
"trucks or trestles."

It is also shown in the English patent to Henry Oliver Robinson, dated August 1st, 1868, over eight years before Mr. Bowers applied for his patent. See Record, first half of page 2447, where the statement is made that the dredged material "is received in punts or barges or run out to the bank *through* "*a floating tube*, as may be desired."

Being old, Mr. Bowers could not claim the floating discharge-pipe as a device by itself, but has only claimed it as one of the mechanical elements of a combination. Such claims admit that each one of the elements is old, and of course admit the floating discharge-pipe, as a device, to be no part of Mr. Bowers' invention.

Corn Planter Patent, 23 Wallace, pages 224 and 225.

Hence the question as to whether the claims containing the discharge-pipe as an element cover patentable combinations or only unpatentable aggregations is an important one.

We urge that both as to the spud, and also as to the discharge-pipe, that they may be applied to dredgers of all classes, chain and bucket dredgers as well as suction dredgers, and to suction dredgers that do not have any rotary cutters as well as to those that do have them. That therefore the rule applied by this Court in *Heald* vs. *Rice*, 104 U. S., 737, to the effect that when a device has once been applied to another device, it is no invention to apply the same device to every other variety of that species of devices to which the application was first made. In *Rice* vs. *Heald* the claims covered the combination

of a straw-feeding device applied to the furnace door of a return flue boiler, which combination proved successful. But the straw-feeding device had been applied already to the furnace door of an ordinary portable boiler and the combination had failed. This Court decided that there was no invention in applying the same device in the return flue boiler combination.

Patent No. 355,251.

The second patent sued on differs from the first in that it contains a telescoping suction-pipe. As early as July, 1876, Von Schmidt showed Bowers a plan of his, Von Schmidt's, dredger, and showed him a model of the same. *Up to that time Bowers had not put in any of his drawings or descriptions any such thing as a telescoping suction-pipe.* Soon after he saw Von Schmidt's plan he made up his specifications and put into them the telescoping suction-pipe. This was so palpable an appropriation of Von Schmidt's invention that we have been suprised that the courts should for a moment tolerate it.

The evidence showing these facts is partly negative, in that in none of Mr. Bowers' evidence does he show any telescoping suction-pipe until he filed his application for a patent December 9th, 1876. The affirmative evidence that Von Schmidt so showed him his plan and model is in the Record, pages 623, 607–608.

The model was sent to Washington when Von Schmidt applied for his patent, which was July 3rd, 1876. So that he must have shown it to Bowers as early as June, 1876.

Wherefore petitioner prays that a writ of *certiorari* asked for be granted herein and that justice be done in the matter.

M. A. WHEATON AND
FRANK J. KIERCE,
Counsel for petitioner.

Office Supreme Court, U. S.
FILED
MAR 31 1897
JAMES H. McKENNEY,
CLERK

Supreme Court of the United States

OCTOBER TERM, 1896.

No. 754

EX PARTE ALLEXEY W. VON SCHMIDT,
PETITIONER.

Argument for Appellee in Opposition to Issuance of Writ of Certiorari.

JOHN H. MILLER,
Counsel for Appellee.

GEO. SPAULDING & CO., PRS., 414 CLAY ST., SAN FRANCISCO.

In the Supreme Court of the United States.

OCTOBER TERM, 1896.

IN THE MATTER OF THE APPLICATION OF ALLEXEY W. VON SCHMIDT FOR A WRIT OF CERTIORARI.

BRIEF OF APPELLEE A. B. BOWERS IN OPPOSITION TO THE ISSUANCE OF THE WRIT.

A. B. Bowers, the appellee in this case, resists the application of Von Schmidt for a writ of *certiorari* on the ground that the petition does not make out a case entitling the petitioner to the writ in question.

The application is made under section 6 of the act of March 3, 1891, establishing circuit courts of appeals, and the object of the petition is to obtain a review by this court of the decree of the circuit court of appeals rendered on an appeal in the case of *A. B. Bowers* vs. *A. W. Von Schmidt*.

This court has laid down the rules governing applications of this kind in the following cases, viz.: *Lau Ow Bew, Petitioner*, 141 U. S., 583; *In re Woods, Petitioner*, 143 U. S., 205; *American Construction Co.* vs. *Jacksonville Railway*, 148 U. S., 382, and in several others.

The point of those decisions is that the granting of the writ of *certiorari* is a branch of the jurisdiction of

this court "which should be exercised sparingly and with great caution, and only in cases of peculiar gravity and general importance, or in order to secure uniformity of decision."

In view of such ruling the petition in the case at bar fails to make out a case for the issuance of the writ. It presents no question of "peculiar gravity" or "general importance," nor is it asked in the interest of "uniformity of decision." On the contrary it presents the case of a controversy between two private individuals relating to the infringement of a patent. Bowers sued Von Schmidt, claiming an infringement of a patent. The circuit court decided in favor of Bowers and granted an injunction. The circuit court of appeals affirmed that decision. Certainly these facts show no case for the issuance of a writ of *certiorari*. If they do, then every defeated litigant in a patent case can come to this court and demand a review of his case.

Our position will be rendered unassailable by a reference to the several grounds on which the petitioner asks for the writ, which grounds appear at pages 19 and 20 of the petition and pages 5 and 6 of the brief of petitioner. The first two specifications of error read as follows:

"FIRST. *Under section 4897 of the revised statutes, has the commissioner of patents jurisdiction or power to allow a renewal application to be filed without any renewal specification and without any new oath?*

"SECOND. *If the commissioner does have such power,*

does he have jurisdiction or power to allow after the renewal new inventions to be described and claimed in amended specifications which new inventions were not described or claimed, either in the original specifications that were filed or in any amendments thereof which were made prior to the renewal, and for which no patent had been ordered to issue upon the payment of the final fee?"

In regard to these two specifications of error it is sufficient to remark that they could not be considered in any event, even if they were matters of peculiar gravity and public importance, for the reason that no such issues were raised in the case in the circuit court, either by pleading or by argument, and on appeal to the circuit court of appeals there is no specification of error to reach them.

It is true that the counsel for Von Schmidt argued those questions in his brief in the circuit court of appeals, but the fact is as we have stated, that those questions were not raised or argued in the circuit court, nor were there any specifications of error to reach them in the circuit court of appeals. Consequently they furnish no ground for the issuance of the writ of *certiorari*.

But, further, even if those questions were raised and can be considered, they do not afford any grounds for the issuance of the writ of *certiorari*, because they involve no question of "peculiar gravity" or "general importance" within the rulings of this court in the cases heretofore cited, governing the issuance of the writ of *certiorari*.

The third specification relied upon by the petitioner reads as follows:

"THIRD. *Did the said circuit court and court of appeals err in deciding that new inventions could be added to the specifications after the lapse of the original application and the subsequent renewal thereof?*"

In regard to this, we state that there was no such issue in the case. Neither the circuit court nor the circuit court of appeals decided that *new inventions* could be added to the specification after the lapse of the original application, and the subsequent renewal thereof. Of course no *new invention* can be inserted in a renewal application. No new invention was inserted in the Bowers renewal application, but what was inserted was *new claims* for *old inventions* which were shown, indicated and described in his original application and drawings filed in December, 1876. The courts decided that that original specification disclosed inventions for which Bowers afterwards obtained his broad claims, and that he had a right to claim his inventions in such form as to protect them. But that is not claiming *new inventions*. There was no *new invention* inserted in this case after the renewal, but the claims which were subsequently inserted were claims for the inventions shown in the original specification.

His honor judge Joseph McKenna, who tried this case in the circuit court, said of this matter: "It was certainly competent for the patent office to permit him (Bowers) to amend his specification so as to embrace

his invention, and it has been held that this may be done even though the change be made in reference to another patent applied for and issued after his invention. *Western Electric Co.* vs. *Sperry Electric Co.*, 7 C. C. A., 164."

On referring to the case cited by judge McKenna, we find the following syllabus:

"An inventor has a right to change his specification, so long as he does not change the structure of his device or invention, even though he makes the change with reference to another patent which has been applied for and issued while his application was pending."

In the case at bar Bowers never changed the structure of his device or invention. That always remained the same from the date of his first application. What he did do was to amend his *claims* from time to time while his application was pending in the patent office, and that he had a right to do. That the claims as finally allowed are not broader than the actual invention as shown in the original specification and drawings cannot be denied. Hence, the insertion of these amended claims were not the insertion of what counsel calls "new inventions."

The remaining specifications of error found in the petition designated as fourth, fifth, sixth, seventh and eighth, are utterly insufficient to form the basis for the issuance of a writ of *certiorari*. They are merely statements that the lower court erred in deciding matters of private dispute between Bowers and Von

Schmidt. They relate solely to the validity of the Bowers patent and its infringement by Von Schmidt, and clearly the public has no interest in a private controversy between Bowers and Von Schmidt.

In submitting this matter to the court we desire to state that both the petition and the brief of the petitioner are filled with misstatements of fact concerning matters of evidence and also matters of law that were decided, as were his briefs in both the circuit court and the circuit court of appeals, which will clearly appear by reading the decisions of those courts, but we do not deem it neeessary to go into such a controversy here, in view of the fact that even if they were true, no case has been made for the issuance of a writ of *certiorari*. Why the counsel for petitioner should persist in making misstatements of fact to the court we are at a loss to conjecture. But we assert that he has made such misstatements of fact in a great many instances in his petition. We apprehend that they will have no influence on the court in deciding this case, but we were unwilling that the matter should be submitted without a protest from us regarding these misstatements of fact.

Respectfully submitted,

JOHN H. MILLER,

For Appellee.